Displays

CyRAQ® 21C Series

21" NEMA 4X Flat Panel Displays

For Rack, Panel, and VESA Mounting Systems with Optional *AR Bonding™ Technology*

USER'S MANUAL

VER. 1.3C• APR 2009

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CyberResearch®, Inc.

www.cyberresearch.com

25 Business Park Dr., Branford, CT 06405 USA

203-483-8815 (9am to 5pm EST) FAX: 203-483-9024

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April 30, 2009

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CYRAQ 21C		
Revision #	**Description**	**Date of Issue**
1.0C	Initial Release	September 22nd 2008
1.1C	Updated power supply specs	October 4th 2008
1.2C	Added Flush-Mount Mechanical Drawing	October 6th 2008
1.3C	Updated function button actions	April 30, 2009

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1 Introduction

Congratulations on your purchase of the most innovative and versatile Industrial LCD display available today—the **CYRAQ® 21**. The CyberResearch CYRAQ 21 uses a groundbreaking raised bezel design allowing the installation of a rugged 21.3″ flat panel display in a standard EIA 19″ rack! The engineers at CyberResearch have also designed mounting plates that allow the CYRAQ 21 to be *rack or panel-mounted* in either landscape or portrait orientation. The accompanying screen rotation software rotates the desktop 90°, 180°, or 270° to provide a suitable viewing angle for any display orientation.

The CYRAQ 21 complies with the power management regulations of VESA DPMS, making it extremely energy efficient—75W while active and 3W in power-saving mode. The CYRAQ 21 LCD display emits very low radiation levels and virtually no electromagnetic field. Fully compatible with the PC and Macintosh, the CYRAQ 21 provides dual inputs (VGA and DVI) is "Plug & Play" compatible and also complies with DDC1/DDC2B. The On Screen Display menu provides users with an intuitive interface making it simple to quickly adjust the display.

The CYRAQ 21 is the first ever 21.3″ 1600 x 1200 flat-panel display capable of panel, swivel-arm or rack mounting. It sets a new standard for clear, bright, flicker-free images and its NEMA 4X front bezel makes it ideal for use in industrial environments.

1.1 Why the CYRAQ® 21?

The CYRAQ concept was conceived in the Engineering Department at CyberResearch as we began to examine how the recent advances in LCD technology and image quality could potentially affect our market and customer base. The LCD display today provides viewing angles comparable to CRTs with no discernable loss of picture quality; a LCD resultantly provides crisp, clean, deep images WITHOUT screen glare. Coupled with a flat screen, slim design, extremely low radiation and almost no electromagnetic emissions, an LCD display can provide some very distinct advantages to users in manufacturing, commercial and scientific applications.

Put simply, the innovation of the CYRAQ series is derived from its size and applications. Never before have the industrial and scientific markets been able to utilize large LCD displays versatile enough to be rack, panel or VESA arm mounted yet robust and capable enough to perform in harsh environments. The CYRAQ stainless steel enclosure not only provides an unmatched degree of protection to the unit's components, it dually helps achieve a NEMA 4X rating capable of sustaining normal operation (when installed correctly) while enduring screen washdown and other procedures commonly practiced in a harsh environment.

The CyberResearch, Inc. CYRAQ series displays have been engineered to couple with a revolutionary new mounting plate system that allows a user to install the CYRAQ display into a rack, or a panel without retrofitting disparate hardware, drilling holes, or welding mounting studs. The mounting plate systems make it a snap to install a CYRAQ into a standard 19″ rack, or panel-mount in any orientation.

Currently, the CYRAQ family is comprised of many, many models including displays featuring rear controls only, VESA mounting, choice of color and touchscreen (serial or USB available). CyberResearch has also expanded the CYRAQ family—please call us or visit our website for more information.

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1.2 CyberResearch® AR Bonding™ Technology

Standard LCDs used in bright ambient light may appear "washed out" due to excessive reflection from these lighting conditions. CyberResearch has developed a manufacturing technique that reduces ambient light reflection inside the display case, making our LCDs appear brighter—even in direct sunlight.

CyberResearch now offers AR Bonding™ Technology on our entire line of signature CYRAQ® LCDs, which dually seals the display while significantly reducing the transmission of reflected light to it. We've accomplished this by utilizing a high-quality bond that optically couples the front cover glass to the face of the display. This technique practically eliminates internal light reflection, which directly improves viewing quality.

Additionally, sealing the display with AR Bonding™ Technology greatly enhances its structural integrity, providing superior shock protection and dually eliminating the possibility of trapped moisture between the LCD and cover glass. This not only reduces troublesome fogging in humid and moist conditions, it keeps condensation and wetness away from your LCD.

Reducing the effect of ambient light reflection on your display can dramatically improve its performance! When AR Bonding™ Technology is applied to a 250 nit display, it can increase the effective contrast and provide the enhanced daylight viewing equivalent to that of a 500 or 600 nit display without AR Bonding™ Technology. Minimizing refracted ambient sunlight to the LCD yields a discernable increase in display performance.

`

1.3 Product Safety and Regulatory Information

To prevent fire or shock hazard, do not expose the unit to rain or moisture. Dangerously high voltages are present inside this unit. ***Do not disassemble the unit—there are no user-serviceable components inside the display's enclosure.*** Please contact CyberResearch, Inc. for repair.

This equipment is not intended for use in critical applications where its failure to operate would create immediate life threatening circumstances. Applications including, but not limited to nuclear reactor control, aerospace navigation systems and life support systems are not appropriate for this product.

The CYRAQ® 21 should be mounted in a suitable cabinet or enclosure. The NEMA rating for this product is applicable only when the product is properly set up and installed.

FCC Notice:
The Federal Communications Commission Radio Frequency Interference Statement includes the following warning:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television receptions, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

European Notice
Products with the CE marking comply with the EMC Directive (89/336/EEC), (92/31/EEC), (93/68/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.
Compliance with these directives implies conformity to the following European Norms:

- EN55022:1998+A1:2000 - Radio Frequency Interference
- EN55024:1998 - Electromagnetic Immunity of Information Technology Equipment
- EN61000-3-2:1995+A1/A2:1998 - Power Line Harmonics
- EN61000-3-3:1995 - Voltage Fluctuations

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1.4 Specifications

Display		
Display Type		LCD flat panel
Video Input Types		Standard analog VGA (15-pin) DVI (Digital Visual Interface) S-video Composite
Screen Size (viewable area, diagonal)		21.3"
Display Filter Screen Size		20" and larger
Display Brightness		300 nits (High-Bright)
Resolution, maximum		1600 x 1200 pixels
Resolution		640 x 480 pixels 800 x 600 pixels 1024 x 768 pixels 1280 x 1024 pixels 1600 x 1200 pixels 640 x 435 pixels 720 x 400 pixels
Screen Protection		Glass Anti-reflective coating
Display Special Features		• Optimum Resolution: 1600 x 1200 @ 60Hz • The glass front panel is of high light transmission tempered glass. Units without touchscreen feature antireflecting, antiglare, hard-coat glass screens • Display PC and video images simultaneously as picture-in-picture or as picture-by-picture (VGA or DVU for PC, S-video or composite for video; PIP and PBP in landscape orientation only)
Maximum Number of Colors		16 million colors
Maximum Color Depth in Bits		24-bit color
Contrast Ratio		900:1
Aspect Ratio		4:3
Viewing Angle	° Horizontal	178°
	° Vertical	178°
Scanning Frequency	Vertical	56Hz....75Hz
	Horizontal	30KHz....81KHz
	Vertical (digital signals)	56Hz....75Hz
	Horizontal (digital signals)	30KHz....81KHz
Dot Pitch		0.27mm
Response Rate	GTG (gray-to-gray)	8ms
Backlight Type		CCFT

Chassis	
Mounting Configuration	Rack-mount (EIA 19") Panel-mount Desktop / benchtop Wall-mount Swivel-arm mount
Protection Rating	NEMA 4 sealed front panel NEMA 4X NEMA 12 IP65 (dustproof, most low-pressure jets of water)
Display Filter Protection	Water-Resistant, Corrosion-Resistant (NEMA 4X)
Front Panel Material	Stainless steel
Chassis Material	Stainless steel
Height, Rack Units	9U (15.75")
Front Panel Color	Black
Custom Color Options	Custom color available ($300 for first unit, call for qty. pricing)
Chassis Special Features	• Features an ultra-compact, corrosion-resistant enclosure of heavy-duty stainless steel (304 SS). All models come with a water-resistant sealed front panel suitable for washdown. • Built-in Poron® gasket seals between rear of display and user panel or rack-mounting plate. When properly mounted in an appropriate enclosure, these displays meet NEMA 4X standards for watertightness. • Models CVSF 21C and CVBF 21C, designed for VESA swivel-arm mounting, do not include rear studs, gasket, or a mounting plate, but CVxx customers receive a $75 credit toward purchase of a swivel arm on request. • The glass front panel is of high light transmission tempered glass. Units without touchscreen feature antireflecting, antiglare, hard-coat glass screens. • May be ordered with user controls for OSD and display power on the front or rear.
Mounting	
VESA Mounting Hole Pattern	100x100mm VESA mounting holes
Stand Features	• Enclosure can be rack, panel, wall, or swivel arm mounted • Universal mounting plate facilitates mounting in a standard EIA 19" rack, or can be used behind panel for secure panel mounting • Optional portrait rack-mounting plate *(substituted on request)* lets you rack-mount display in portrait orientation screen rotation software included)

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Indicators, Switches, & Controls		
On Screen Display (OSD) Control Functions		Brightness Contrast RGB color adjustments Horizontal position Vertical position Color balance Color temperature adjustment Video source selection Select language for OSD controls Position of OSD controls Reset to factory defaults Geometry (parallelogram) Sharpness Auto adjustment Gamma Appearance of OSD controls Duration of OSD controls onscreen
Front Panel Controls	OSD Controls	OSD controls for menu navigation (5 buttons)
	Brightness	Via OSD controls
	Contrast	Via OSD controls
	Other Controls/Features	• Auto Button: One-touch automatic screen adjustment • Exit Button: Quits OSD menu (switches between analog or digital signal inputs when the OSD menu is off) • +/- Button: Increase/decrease item selected in OSD menu
Rear Panel Controls	Power On/Off Switch	1 on/off switch
Indicators	Power On/Off	LED indicates power on
	System in Sleep Mode	Shown by pulsing power LED
Signal Connectors		
Video Input Connectors		HD15 (standard VGA) connector DVI-D Dual Link (25-pin) connector RCA composite video (NTSC) connector S-Video connector
Cables		
Video Cable Length (included)		6 feet
Cabling Details		15-pin D-sub VGA, DVI-D, and AC power cables included (6-ft each)
Power Supply		
Power Supply Form Factor		External
Nominal Input Voltage(s)		100~240 Vac
Input Voltage Range(s)		90~264 Vac
Input Frequency		47~63Hz
Max. Current Draw		1.9A @ 155 Vac
Power Supply Input Connector		On external power module NEMA standard male PC cord socket w/ 6-ft USA power cord
Power Consumption		
Power Consumption Details		63W active, 2W in power-saving mode
Cooling		
Cooling Summary		3 cooling fans
Cooling Fans	Number of Fans of This Type	3
	Fan Size	60mm X 60mm
	Fan Location(s)	Rear
Air Filter Location		Rear

Environmental Specifications		
Operating Temperature		50°F....122°F (10°C....50°C)
Storage Temperature		-4°F....140°F (-20°C....60°C)
Relative Humidity, noncondensing		10%....95%
Shock Resistance	Operating	30g half-sine for 11ms
Vibration Resistance	Operating	15 to 57Hz: 0.006" peak-to-peak; 57 to 640Hz sine: 1.0g peak-to-peak
Altitude, Max.		1.89mi (3.05km)
Safety & Standards Compliance		
MTBF (average) -- Display Backlight		50000 hours
Power Management		EPA Energy Star compliant DPMS (Display Power Management Signaling)
Dimensions		
Width		19.02" (483mm)
Height		15.71" (399mm)
Depth (including handles)		3.11" (79mm)
Width, Rack-Mount		EIA standard 19 inches at flanges
Height, Rack Units		9U (15.75")
Depth Behind Panel		1.41" (35.8mm)
Protrusion from Rack (including handles)		1.7" (43.2mm)
Panel-Mount Cutout, Width		17.32" (440mm)
Panel-Mount Cutout, Height		14.02" (356mm)
Dimension Details		• Bezel Depth in Front of Panel: 1.58" + gasket thickness • Gasket Depth: 0.125" max., 0.11" compressed • Mounting Adapter Plate Depth: 0.1" • Rack Height in Portrait View: 19.2" (11U) • Panel-Mount Cut-Out (outside mounting studs): 440mm x 356mm
***Flush Panel-Mount* Dimensions**		
Width		20.0” (508mm)
Height		16.7" (424.18mm)
Depth (including handles)		3.3" (83.82mm)
Depth Behind Panel		3.1" (78.74mm)
Protrusion from Rack (including handles)		0.2" (5.08mm)
Panel-Mount Cutout, Width		19.2" (487mm)
Panel-Mount Cutout, Height		15.78" (401mm)
Weight		
Weight		24.03lbs (10.9kg)
Display Filter Weight		Under 30 lbs.

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1.5 Features

1.5.1 Overview

The CyberResearch CYRAQ® 21 is a 21.3-inch analog/digital LCD display that offers the highest quality images possible with analog and digital source inputs. Its multiple inputs (VGA, DVI, S-Video & Composite Video) allow users to connect to different input sources simultaneously. The CYRAQ 21 offers a 500:1 contrast ratio, 1600 x 1200 resolution, pixel pitch of 0.270mm H/V, Xtrawide™ 170°/170° viewing angle, Analog/Digital video inputs, a scanning frequency of 30-93 kHz horizontal and 56-85 Hz vertical, and advanced image scaling.

- 21.3" Viewable Screen Size
- 1600 x 1200 @ 67 Hz
- Breakthrough Universal Mounting Plate Allows the 21.3″ CYRAQ to Mount in a 19″ Rack
- 0.27 MM Dot Pitch
- Connects Via VGA (15-Pin), Digital (DVI), S-Video & Composite Video
- Source Button Allows User to Scan Through Inputs
- NEMA 4X Rating
- Rack, Panel, or Swivel-Arm Mounted

1.5.2 System Requirements

To achieve optimum response time the CYRAQ requires a computer with a 486 CPU or higher. The CYRAQ is compatible with Windows® and Apple® operating systems. To operate the display at its highest resolution a video card that supports 1600 x 1200 pixels is required.

2 Setup

2.1 Unpacking the CYRAQ® 21

Before unpacking it is very important to locate the CYRAQ display in a suitable environment. Make sure the installation location has good ventilation, is out of direct sunlight, away form excessive dust, dirt, heat, water, moisture and vibration. Please see Specifications section for environmental details.

2.1.1 Your Package Contains:

1) A CYRAQ Series display
2) CYRAQ® Series Drivers & Manuals DVD
3) External power module with 6-ft. AC cord
4) 6-ft VGA and DVI cables
5) User's Manual
6) Universal Mounting plate **CRMS UNL** (applies to landscape rack-mount and panel-mount applications only) or Portrait Mounting plate **CRMS POR** (applies to portrait rack-mount applications)
7) Eight Button Head mounting 10-32 1/2″ bolts
8) Fourteen 10-32 mounting nuts.

Panel PC Owners:
If display is part of a CYRAQ panel pc system, package contents will vary from list shown at left. See "Included with CYRAQ® PPC" in panel pc user manual for a complete list of panel pc package contents.

-OR-

CPBF, CPBR, CPSF & CPSR 21C come with **10 mounting clamps** lieu of CRMS UNL or CRMS POR, 10-32 1/2″ mounting bolts and 10-32 nuts.

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2.1.2 Optional Accessories:

1) Longer VGA and DVI cables (call for available lengths)
2) Touchscreens are available for all models
3) SWC 100 VESA mounting plate for VESA mount models

> ***NOTE***: If any of these items are missing or damaged contact CyberResearch, Inc. immediately

2.2 Rack Mounting: CRxF/CRxR 21

IMPORTANT! Ask yourself these questions before beginning installation:

1. Is sufficient power is available?
2. Is sufficient space is available to allow for proper airflow both inside and around the display?
3. Is there a possibility the air temperature inside the rack will exceed the CYRAQ® 21's rated specification? (Operating temperature: 50°F....113°F ((10°C....45°C).)

NOTE: Though this product is designed to operate up to 113°F (45°C) with proper ventilation, the life span of any electronic device is shortened when it is consistently operated at high temperatures—keep rack temperature as low possible

4. Is there a possibility that the ambient humidity around the display will exceed its rated specification? (Relative Humidity, non-condensing: 10%....80%.)

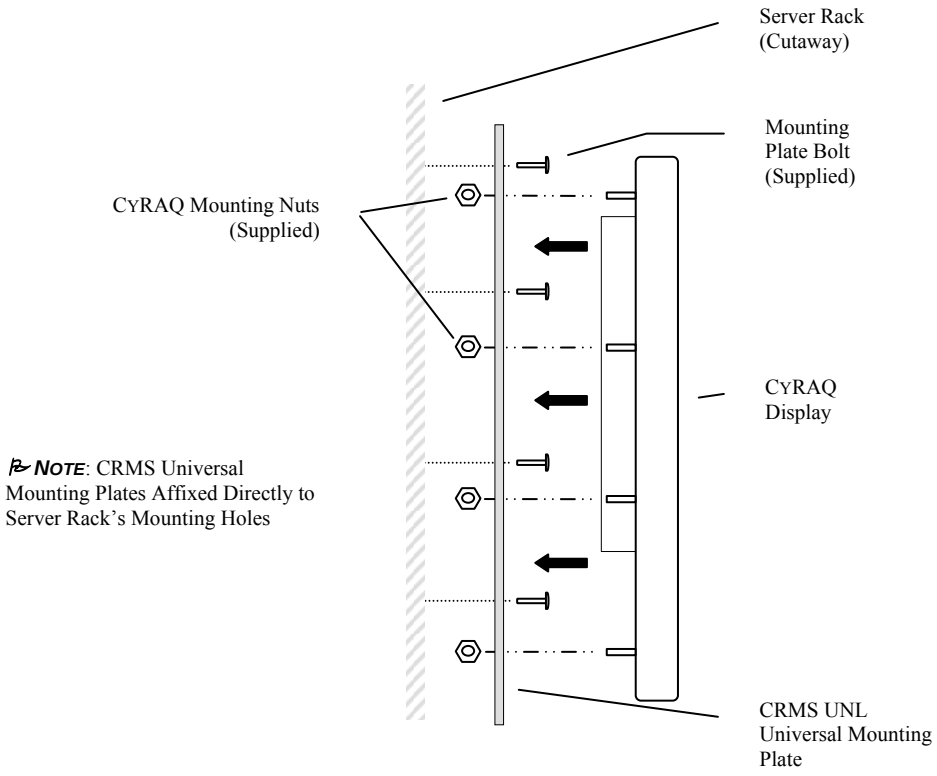

Figure 1: Installation Assembly

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2.2.1 Rack-Mount Gasket Installation

Installing the CYRAQ® in the landscape orientation requires 9U (15.5″) free rack space. Prior to installing the CYRAQ into a rack, the included gasket must be affixed to the mounting plate.

IMPORTANT! **Unless requested at the time of purchase, the display is shipped with gasket applied. Skip to section 2.2.2**.

However, in certain instances the mounting gasket may be shipped loose to allow for increased installation flexibility in the case of custom applications. This permits customers to then choose which mounting application best suits their environment—panel- or rack-mount. Affixing the gasket to the back of the CYRAQ's enclosure is recommended for panel mounting applications; while adhering directly to the mounting plate is recommended for rack-mount applications.

The mounting gasket is a critical component to this display's NEMA 4X rating for watertightness—it must be installed correctly to meet this standard. It is also important to note that the rack-mount installation procedure differs from the panel mount procedure. Please read the instructions below carefully before installing the gasket.

1. On a flat surface, orientate the mounting plate as depicted in Figure 2.
2. Arrange the gasket to match mounting plate.
3. Remove adhesive backing from Section A of the gasket.

NOTE: It's important to focus on aligning the holes of gasket and mounting plate rather than their respective edges.

4. Align center hole in gasket with center hole on mounting plate, take care not to let other portions of the gasket in Section A touch mounting plate until aligned properly.
5. Carefully align and place the rest of Section A holes, working out from center.

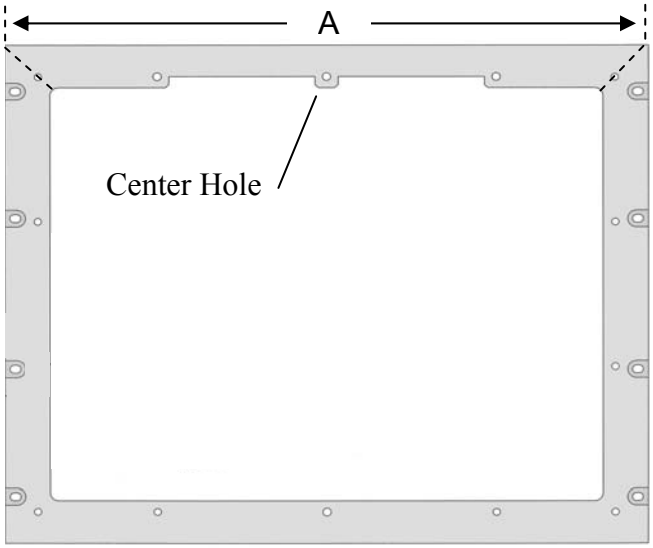

Figure 2: Gasket Installation

6. When done, firmly press down and smooth gasket in Section A.
7. Repeat process for each of the other three sides.

2.2.2 Landscape Orientation

NOTE: Portrait mounting orientation requires 11U (19.2″) free rack space.

NOTE: Follow Section 2.2.1 Rack-Mount Gasket Installation procedure prior to beginning the steps below.

1. Align mounting plate rack-mount holes with server rack mounting holes; see Figure 3 for correct mounting orientation. ***Ensure gasket faces outward***.
2. Install the eight 10-32 1/2″ button head bolts into rack-mounting holes to secure mounting plate to the server rack.

NOTE: Steps 3 & 4 require two people.

3. Align studs with the display mounting holes in mounting plate and install the CYRAQ® until the gasket is flush with rear of enclosure.

Important!
Do not exceed 30 in/lbs when tightening mounting nuts.

4. From inside rack, a second person must install and tighten the fourteen 10-32 mounting nuts.

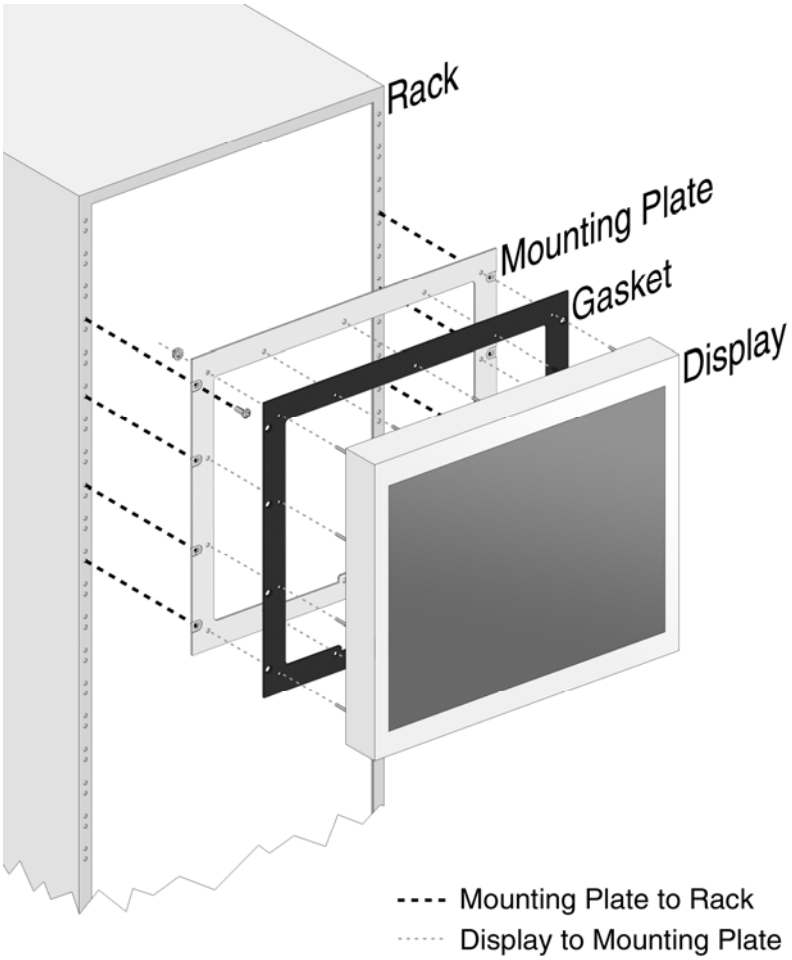

Figure 3: Rack-Mount Landscape Installation

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2.2.3 Portrait Orientation

Note: Follow Rack-Mount Gasket Installation procedure (if necessary) prior to beginning the steps below.

1. Align mounting plate rack-mount holes with server rack mounting holes; see Figure 4 for correct mounting orientation. ***Ensure gasket faces outward.***
2. Install the eight 10-32 1/2″ button head bolts into rack-mounting holes to secure mounting plate to the server rack.

Note: Steps 3 & 4 require two people.

3. Align studs with the display mounting holes in mounting plate and install the CYRAQ® until the gasket is flush with rear of enclosure.

Important!
Do not exceed 30 in/lbs when tightening mounting nuts.

4. From inside rack, a second person must install and tighten the fourteen 10-32 mounting nuts.

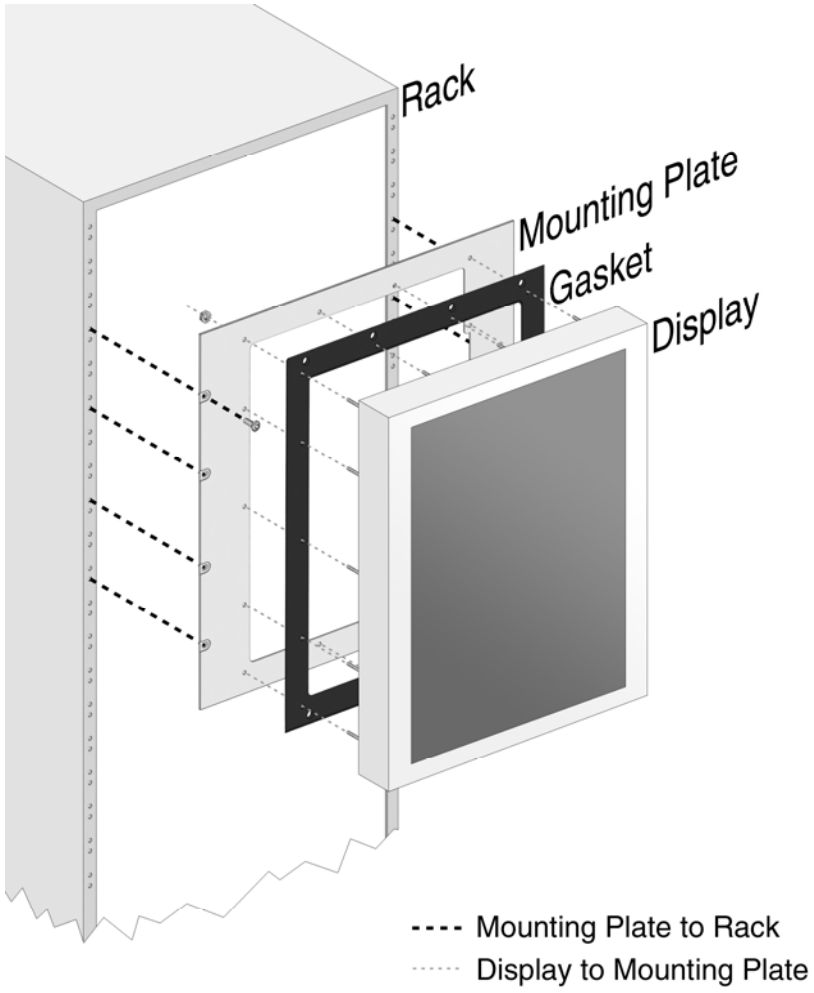

Figure 4: Rack-Mount Portrait Installation

2.3 Panel Mounting: CRxF/CRxR 21

Prior to performing subsequent steps, ensure the panel-mounting location (including panel thickness) is suitable for the CYRAQ® 21, and meets Environmental requirements in Specifications section.

NOTE: Panel thickness should not exceed: .55" (14.1mm) if the unit has the standard 3.2mm (1/8") Poron™ gasket installed. Suggested panel thickness is calculated based on standard CYRAQ 21 parts and dimensions, custom units may not meet these specifications. Prior to panel mounting a CYRAQ, the included gasket must be affixed to the rear of the enclosure.

2.3.1 Panel-Mount Gasket Installation

***IMPORTANT!* Unless requested at the time of purchase, the display is shipped with gasket applied. Skip to section 2.3.2.**

However, in certain instances the mounting gasket may be shipped loose to allow for increased installation flexibility in the case of custom applications. This permits customers to then choose which mounting application best suits their environment—panel- or rack-mount. Affixing the gasket to the back of the CYRAQ's enclosure is recommended for panel mounting applications; while adhering directly to the mounting plate is recommended for rack-mount applications.

The mounting gasket is a critical component to this display's NEMA 4X rating for watertightness—it must be installed correctly to meet this standard. It is also important to note that the rack-mount installation procedure differs from the panel mount procedure. Please read the instructions below carefully before installing the gasket.

1. Place the display face down on a flat surface with bottom of the display closest to you; take care not to damage or scratch the screen.
2. Arrange the gasket to match display orientation; align Section D with bottom of display's enclosure.
3. Remove adhesive backing of Section A on gasket.

NOTE: It's important to focus on aligning the holes of gasket and studs on the rear of the enclosure rather than their respective edges.

4. Align center hole (in Section A) of gasket with center stud on rear of display; take care not to let other portions of the gasket touch mounting plate until aligned properly.
5. Carefully align and place the rest of Section A, working out from center.
6. When done, firmly press down and smooth gasket in Section A.
7. Repeat process for each of the other three sides.

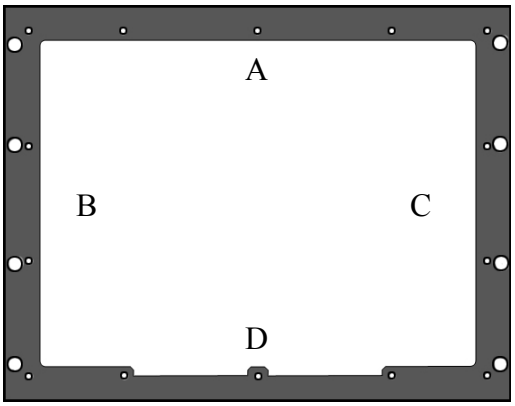

Figure 5: Panel Mount Gasket Installation

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2.3.2 Panel Mounting the Display

1. Panel cutout is 356mm H x 440mm W for landscape installation (Figure 6).
2. Install CYRAQ® in panel cutout. Ensure all studs clear cutout opening and Poron™ gasket on the rear of the unit is flush against panel (critical for NEMA compliance).

NOTE: Steps 3 & 4 require a second person

3. Align studs on the CYRAQ with the holes in mounting plate from the rear of panel as seen in Figure 6.

Important!
Do not exceed 30 in/lbs when tightening mounting nuts.

4. Also from rear of the panel, second person must install and tighten the fourteen
5. 10-32 mounting nuts.

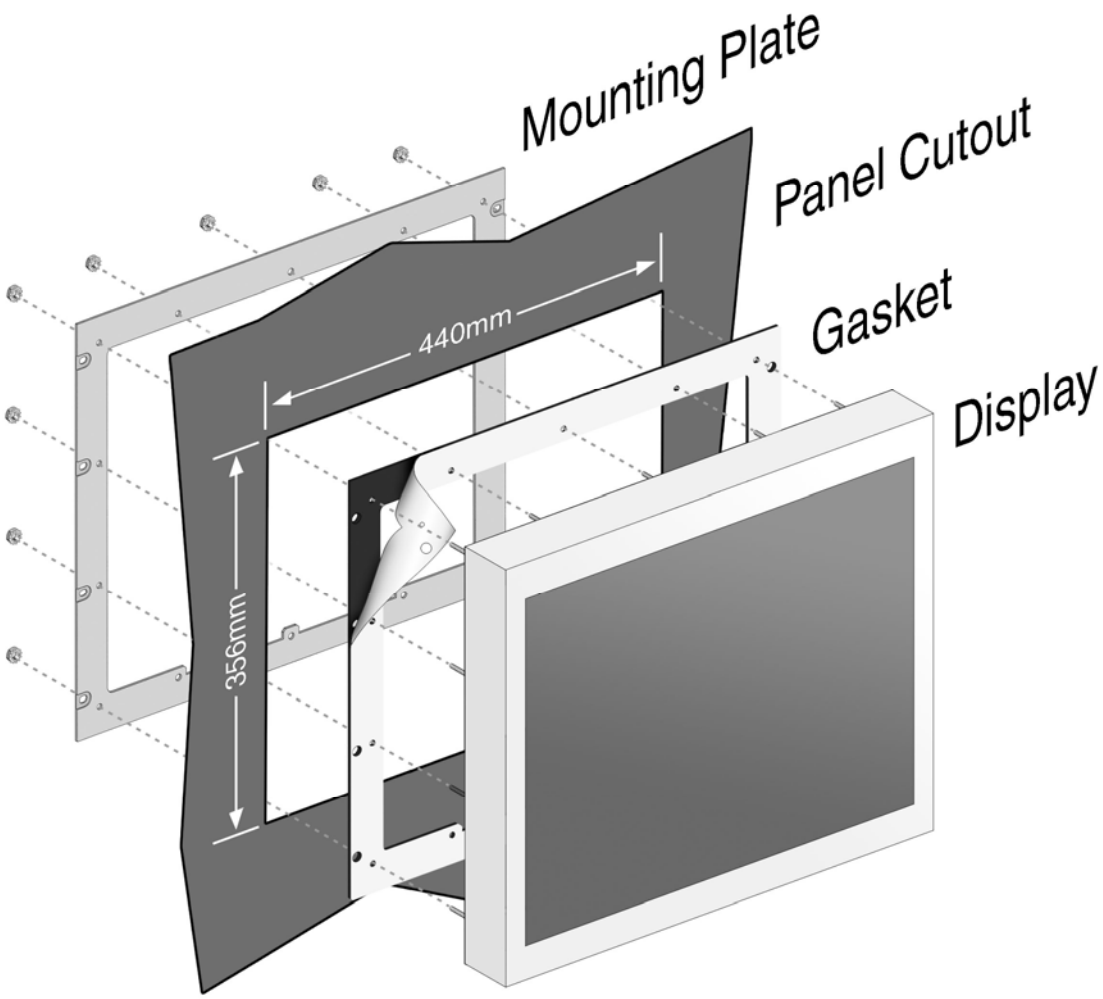

Figure 6: Panel-Mount Landscape Installation

2.4 Flush Panel-Mounting: CPxF/CPxR 21C

Prior to performing subsequent steps, ensure the panel-mounting location (including panel thickness) is suitable for the CYRAQ® 21, and meets Environmental requirements in Specifications section.

NOTE: Panel thickness should not exceed: .55" (14.1mm) Suggested panel thickness is calculated based on standard CYRAQ 21 parts and dimensions, custom units may not meet these specifications. Poron™ gasket is installed by CyberResearch, Inc. on CPBF & CPBR 21 models.

2.4.1 Panel Mounting the Display

1. Panel cutout is 401mm H x 487mm W for landscape installation (Figure 7).
2. Install the display in panel cut out. Ensure and Poron™ gasket on the rear of the unit is flush against panel (critical for NEMA compliance).

See Next Page For Illustration

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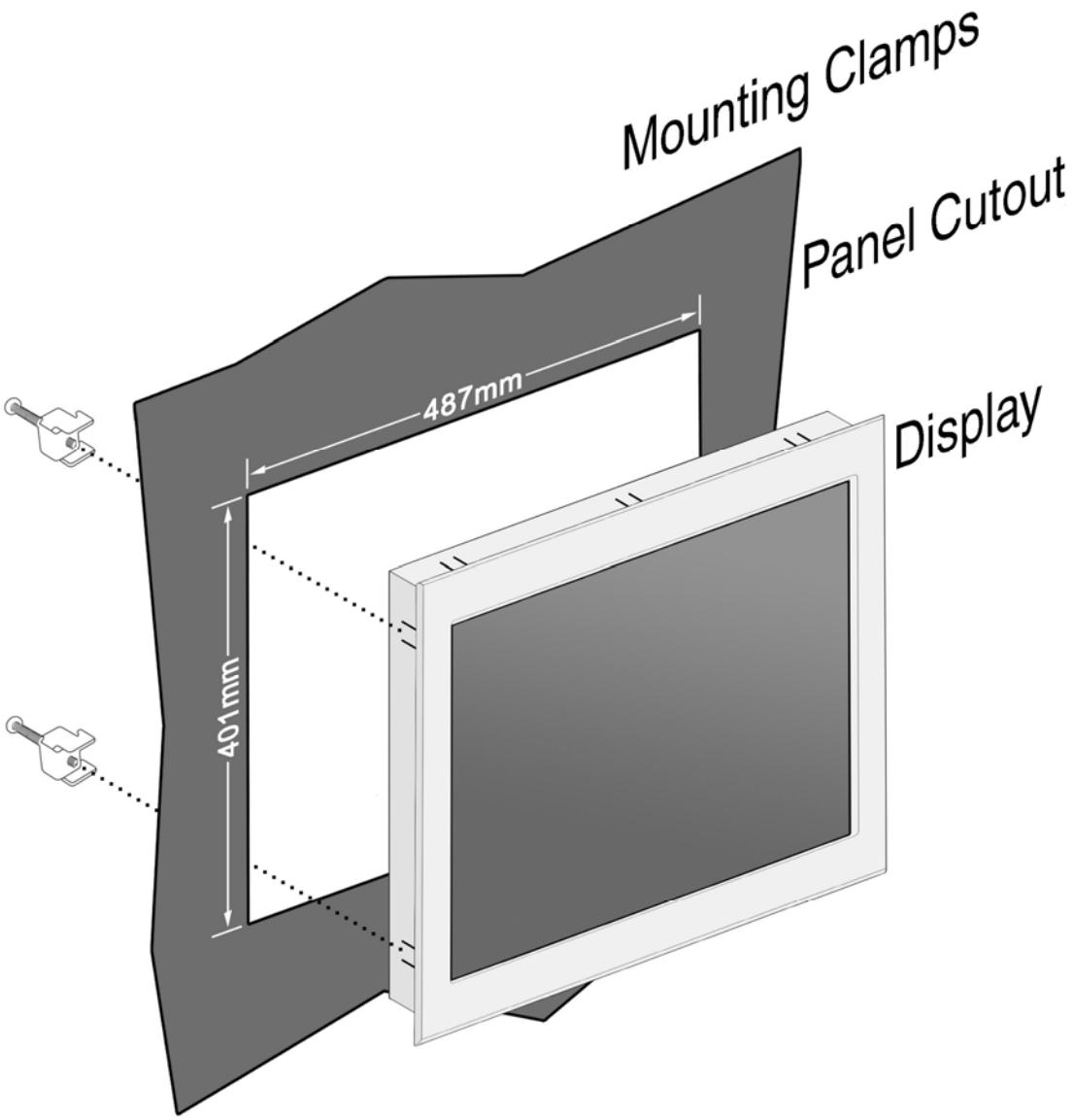

Figure 7: Flush Panel-Mount Landscape Installation

NOTE: Steps 3 & 4 require a second person

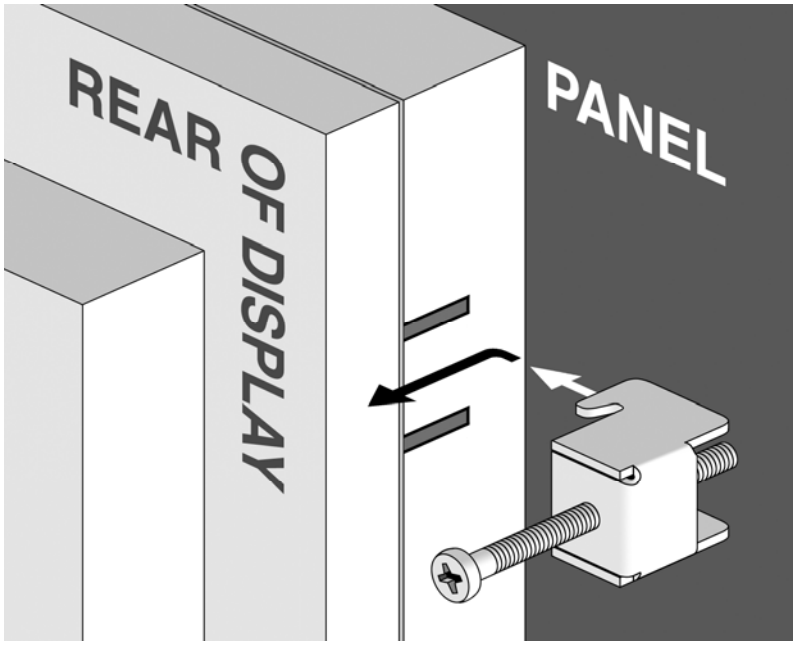

Figure 8: Insert Mounting Clamp

3. With a second person holding the display in place at the front of the panel, insert mounting clamps into slots on rear of display, as shown.

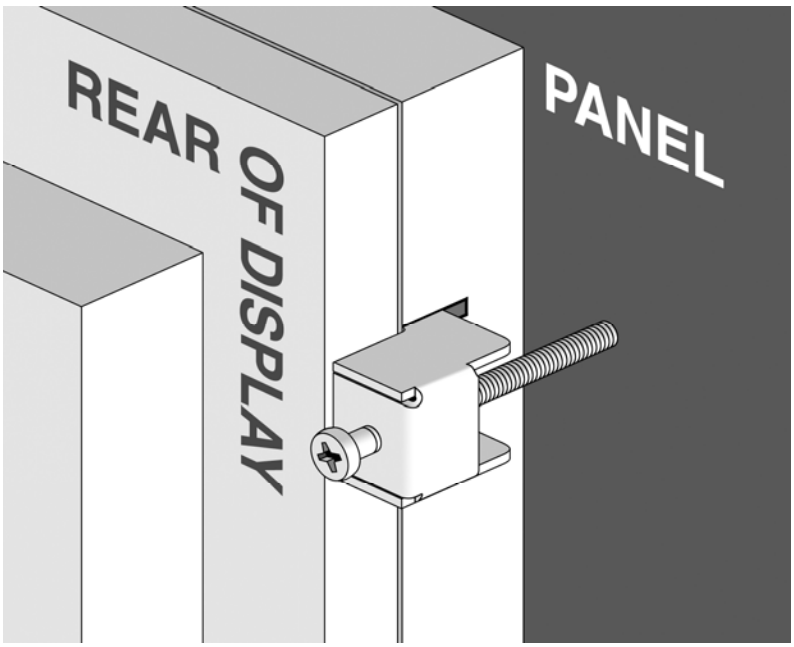

Figure 9: Tighten Mounting Clamp

4. Ensure that hooks on clamp, butt against rear of slot as shown in Figure 9

5. Tighten mounting clamps with Phillips head screwdriver until snug.

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2.5 VESA Mounting: CVBF/CVBR 21

NOTE: These are "Quick Install" instructions for a popular style bench-top mount VESA arm. This VESA arm style ***MAY NOT*** be the mounting choice you've selected for your CYRAQ. Check the documentation accompanying your VESA arm.

1) ***Disconnect*** the power, video and touchscreen cables.
2) Secure cranking unit (#1) to bracket (#2) with at least two bolts (Figure 11). The use of bolts and bolt position depends on thickness of desk. Fully secure bolts with included "T" type hex key.
3) Secure the clamp to the desk/bench top Figure 12). This will make subsequent installation easier. The clamp is capable of securing the arm to surfaces 15-100mm thick (30mm and up is ideal).
4) Before continuing, remove the screw from the arm's base using a Philips head screw driver (Figure 14).
5) Carefully place display on the bench top with screen facing down, as seen in Figure 15.

NOTE: The SWC 100 permits 100 x 100mm VESA displays and 75 x 75mm VESA arms to be used jointly.

6) Secure the SWC 100 adapter (Figure 13) to the VESA arm.

Figure 13: SWC 100 Adapter Mounting Plate

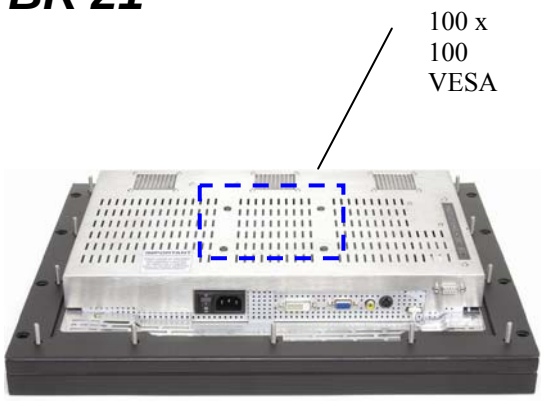

Figure 10: 100 x 100mm VESA Mounting Holes

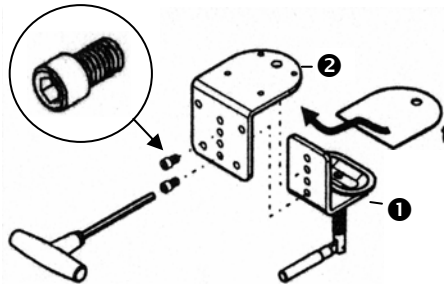

Figure 11: VESA Arm Clamp

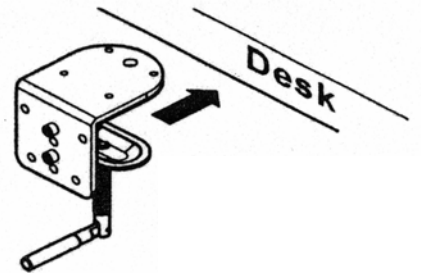

Figure 12: Affix Clamp to Benchtop

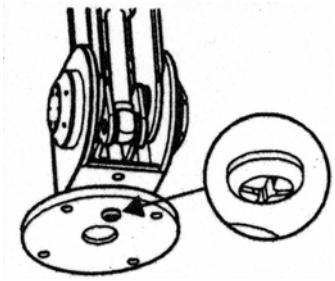

Figure 14: Remove Screw

7) Secure the arm/adapter plate assembly to the display.

8) Secure arm to the clamp with 4 flat head screws (Figure 16); tighten using the "L" shaped hex key.

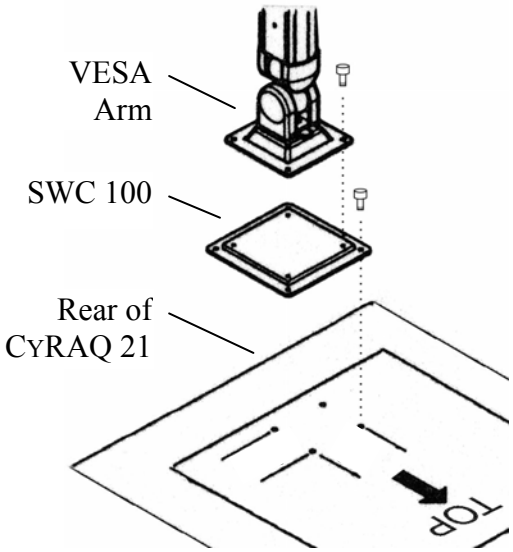

Figure 15: Mounting Arm to Display

NOTE: Check arm capacity setting prior to installation.

9) Use the "T" hex key provided to adjust the weight capacity (Figure 17).

a. Carefully support the main body of arm while gently pushing downward

b. Turn hex key counterclockwise (toward '-') to decrease capacity

c. Clockwise (toward '+') to increase capacity

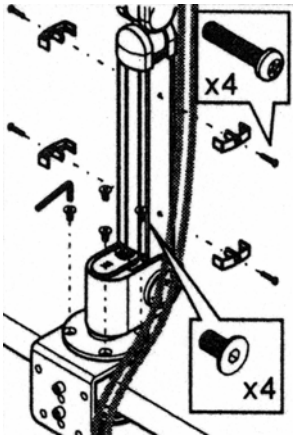

Figure 16: Mounting Arm Base to Clamp

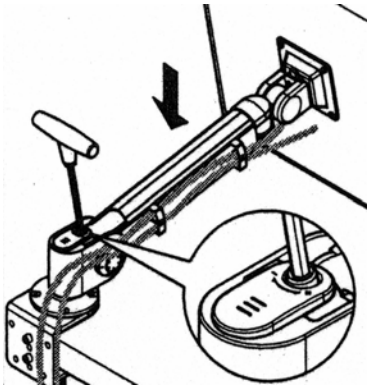

Figure 17: Adjust Weight Capacity

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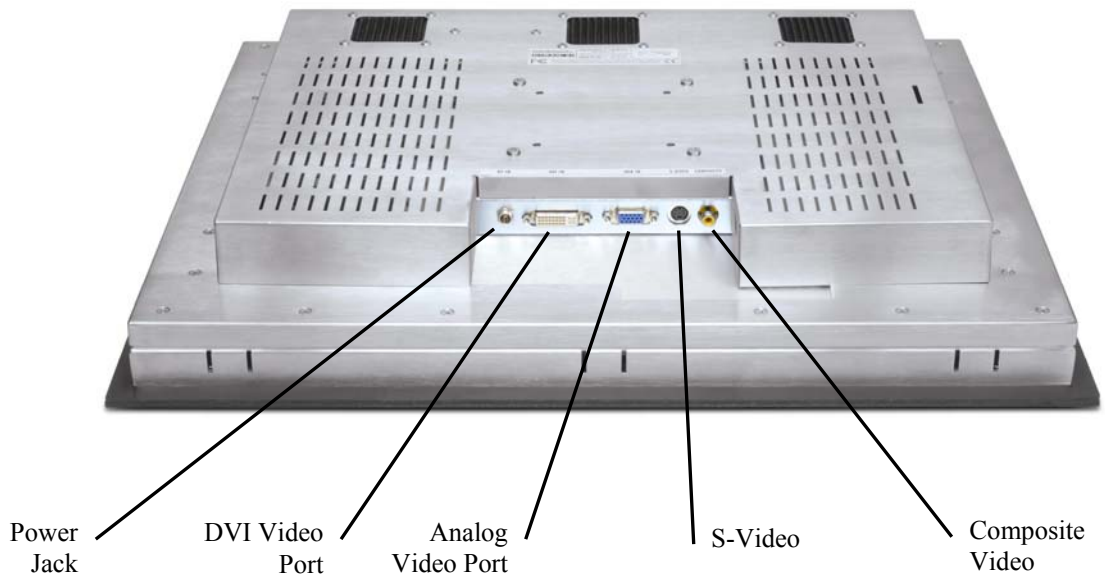
2.6 Connecting the Display

IMPORTANT! Before connecting the power cable to the display, connect all the other cables.

Figure 18: CYRAQ 21C Connection Layout



NOTE: Turn off the computer before connecting the display

1. After connecting all other cables, connect the power cable to the power jack on the back of the display; refer to Figure 18.
2. Press the On/Off Button, the status light will illuminate.
3. Start the computer.
4. If the computer is running, restart.
5. The display should now function normally.

NOTE: See Section 4 Touchscreen for connection and driver instruction

NOTE: If the CYRAQ's screen remains blank or displays the error message "Out of Range" or "No Input Signal," there may be a connection or signal problem. One, or a combination of the possibilities listed below may be the cause:

- Windows resolution is set either too high, or too low for the display; check the resolution by reinstalling the old display

- The refresh rate may be set too high. The refresh rate of an LCD display doesn't need to be set as high as a CRTs refresh rate; set the refresh rate @ 60Hz.
- Incorrect power source.
- The video cable isn't tightly connected at one or both ends; reconnect and tighten the cable adapter screws.
- The analog and DVI cables are both connected to the display and the same computer.
- The display is reading the wrong video input; push the Exit/Source button to toggle between the VGA and DVI inputs.
- The unit is malfunctioning.

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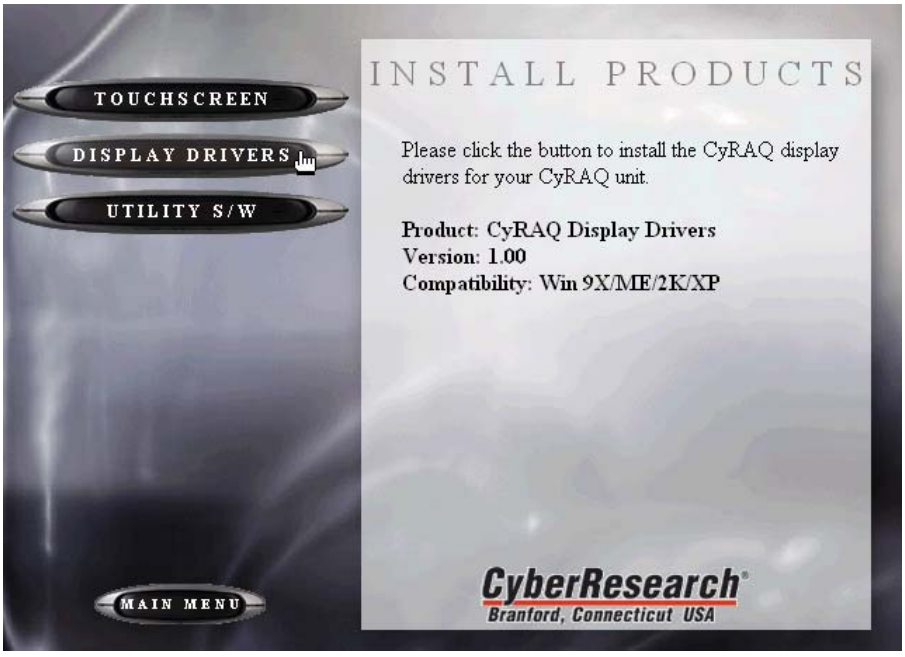
2.7 Display Driver Installation

1. Insert the driver DVD into the computer's DVD drive.
2. When the splash screen appears, select Install Drivers.

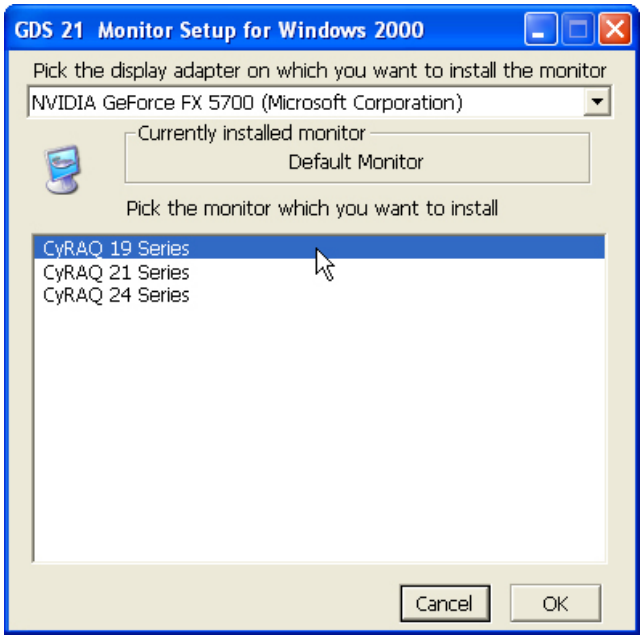
3. When the Install Products window appears, click Display Drivers.



4. Then click on your operating system.

WIN 9X/ME
WIN NT/2K/XP
DISPLAY DRIVERS
Welcome to the Display Driver section.
Please click on a button to the left, for the installer that corresponds to your Operating System.
NOTE: To determine the operating system on your computer, click the START button on your desktop and you will see the version you have written vertically on the start menu that appears.
BACK
CyberResearch
Branford, Connecticut USA

5. Select CYRAQ 21C and click OK.


GDS 21 Monitor Setup for Windows 2000
Pick the display adapter on which you want to install the monitor
NVIDIA GeForce FX 5700 (Microsoft Corporation)
Currently installed monitor
Default Monitor
Pick the monitor which you want to install
CyRAQ 19 Series
CyRAQ 21 Series
CyRAQ 24 Series
Cancel
OK

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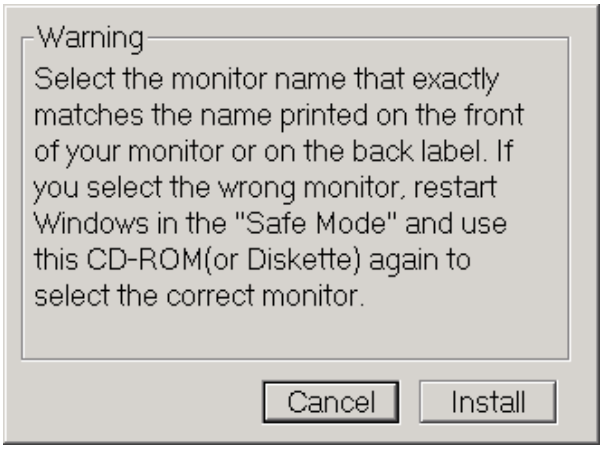
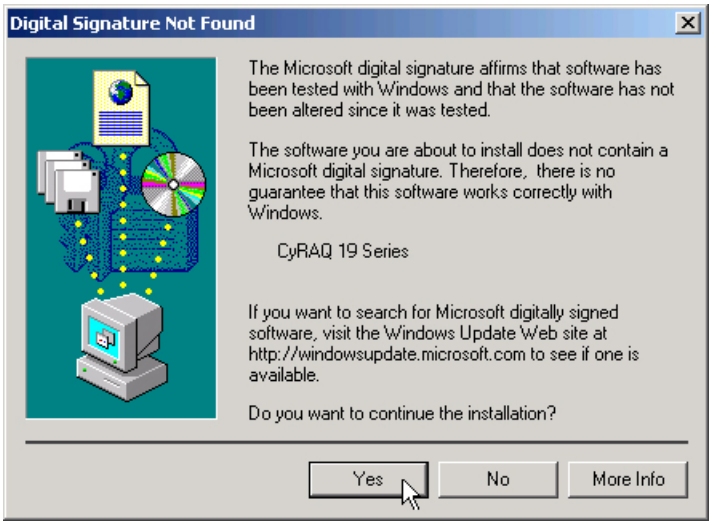
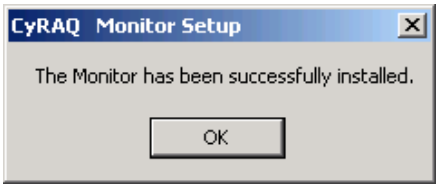
6. Read the display warning.


Warning
Select the monitor name that exactly matches the name printed on the front of your monitor or on the back label. If you select the wrong monitor, restart Windows in the "Safe Mode" and use this CD-ROM(or Diskette) again to select the correct monitor.
Cancel
Install

7. Then Click Install.
8. When the Digital Signature window appears, click Yes.


Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
CyRAQ 19 Series
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

9. When the driver has been installed a Display Setup message will appear, click OK.



NOTE: If the CYRAQ® doesn't display an image immediately, move the mouse to awaken it from "Suspend" mode.

NOTE: If an image still isn't displayed, push the Exit/Source button to ensure the correct input is being used.

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3 Using the CYRAQ® 21C

3.1 User Controls

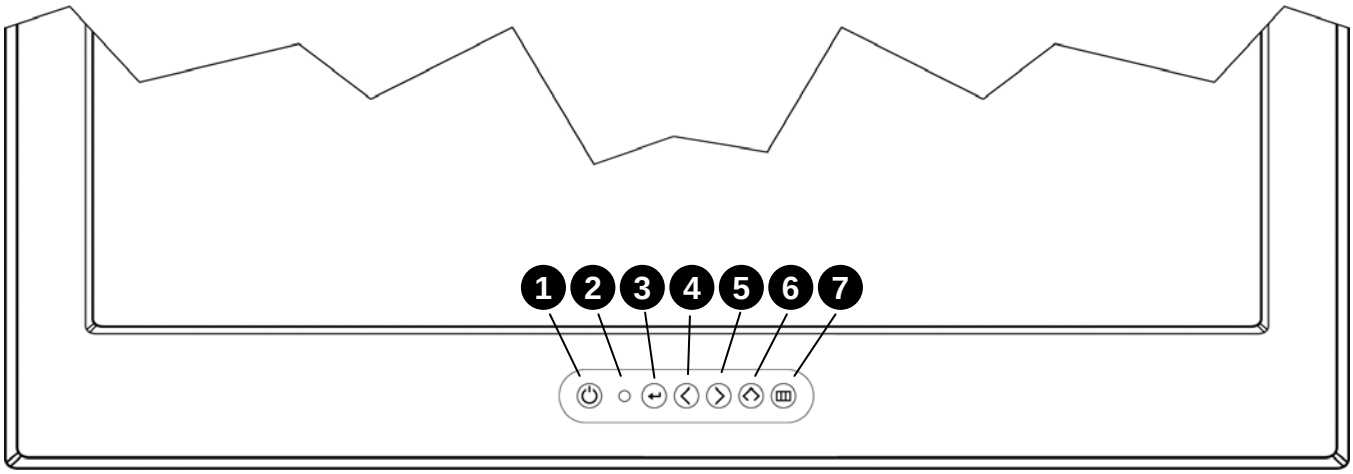
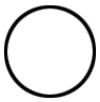
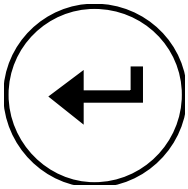
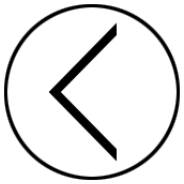
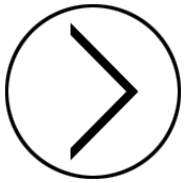
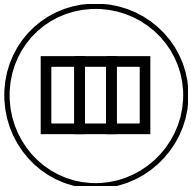


Figure 19: User Controls (Flush Panel-Mount Model Shown)

NOTE: Front and rear user controls are available for the CyRAQ 21C series of displays. The controls for front and rear are identical. The display control membrane for rear-controlled units is mounted vertically on the rear cover.

Function Button	Action
1	**Power On/Off** This button turns the display on and off.
2 	**LED Light** Indicates status of display 1. Green: Power On 2. Red-Orange: Power Off 3. Blinking Red-Orange: Standby/No Signal
3 	**Source** ***OSD ON:*** Up one menu level/Deselect/Exit ***OSD OFF:*** Used to switch from one video input to another
4 	**Adjust – Main Menu** ***OSD ON:*** Used to scroll through menu items, and adjust (down) the value of selected OSD control option ***OSD OFF:*** Launches Brightness control; decreases brightness
5 	**Adjust + Main Menu** ***OSD ON:*** Used to scroll through Main Menu items, and adjust (up) the value of selected OSD control option ***OSD OFF:*** Launches Brightness control; increases brightness
6	**Exit** ***OSD ON:*** Scrolls down through sub-menu items ***OSD OFF:*** Auto adjust
7 	**Menu/Select** ***OSD ON:*** Selects highlighted options ***OSD OFF***: Launches OSD menu

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4 Touchscreen

Touchscreens are the ultimate human/machine interface. In a touchscreen system, touching what you see onscreen makes the computer respond. The touchscreen system is logical, intuitive and simple. Using touchscreens, workers can precisely control complicated processes without being tethered to a keyboard and mouse. People who have never used a computer before can immediately interact successfully with a touchscreen-based computer system allowing airline customers to access flight information, CNC machinists to quickly change programs, and wait staff to instantly send your order to the kitchen—all with the touch of their finger.

4.1 Installation

The Touchscreen and internal controller board inside your CYRAQ® display has already been installed for you by the engineers at CyberResearch, Inc. You should never need to open the case of this unit to install/change any of the internal connections or for any other reason. If you think there is an internal connection problem, contact CyberResearch Inc. immediately.

4.1.1 Serial Cable Connection

1. Shutdown your computer.
2. Plug the DB9 male end of the supplied serial cable into the DB9 female connector on the back of the CYRAQ enclosure.
3. Plug the DB9 female end of this cable into the computer's DB9 serial port. If you have a 25-pin serial port, use the optional DB9 male to DB25 female adapter.

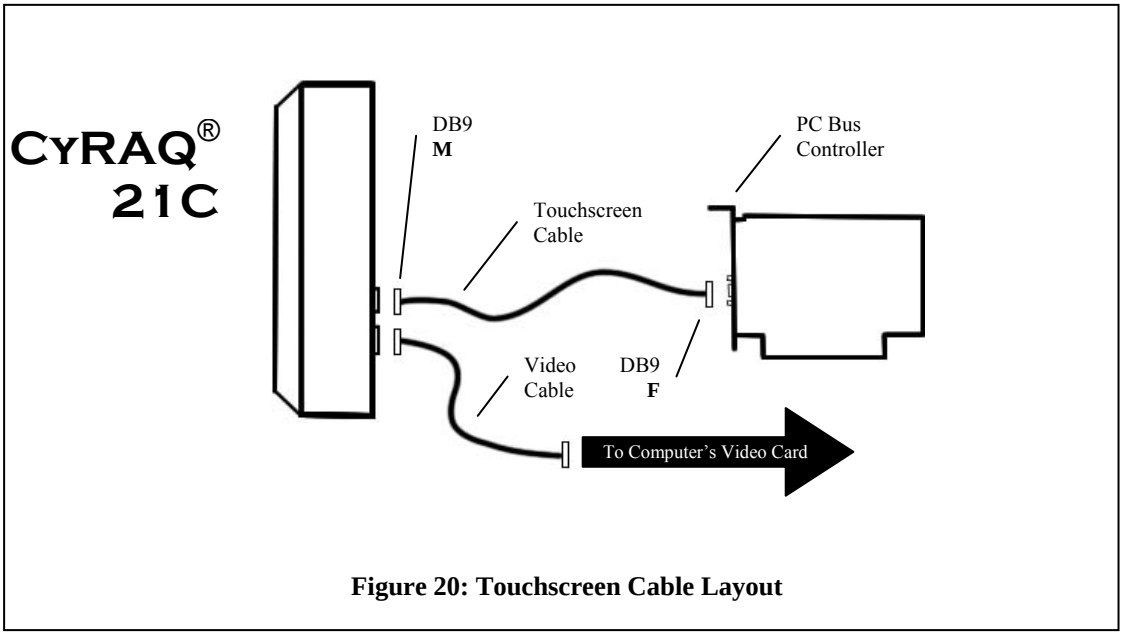

Figure 20: Touchscreen Cable Layout

4.1.2 USB Cable Connection

1. Shutdown your computer.
2. Plug the USB cable into the display's USB connector on the back of the enclosure.
3. Plug the other end of the USB cable into a free USB port on the back of the computer.

4.1.3 Touchscreen Driver Installation

1. Reboot your computer.
2. After Windows® loads, put the CyberResearch Software and Utilities DVD into the drive.

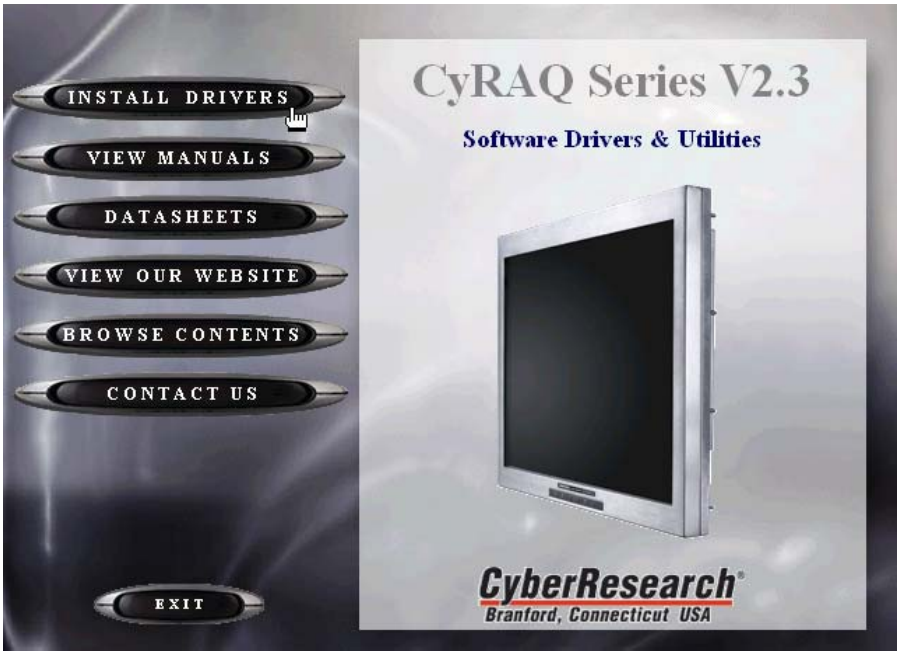

Figure 21: Splash Screen

3. When the splash screen appears (Figure 21) click on Install Drivers
4. Then click TouchScreen (Figure 22)

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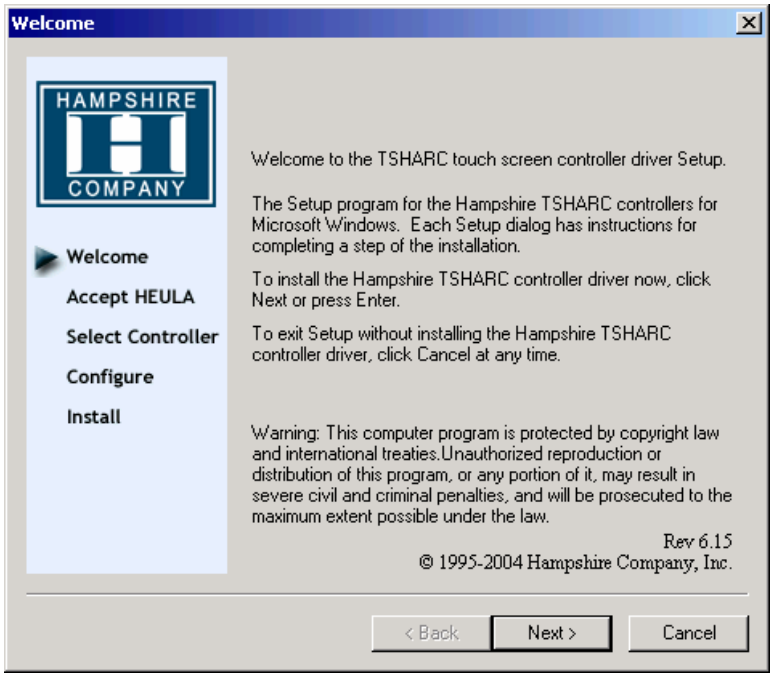
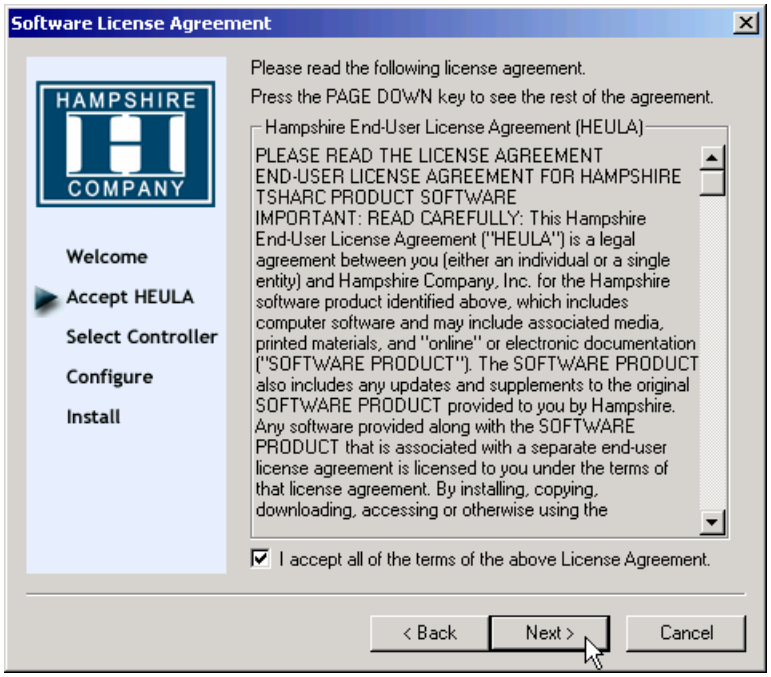
Figure 22: Install Products

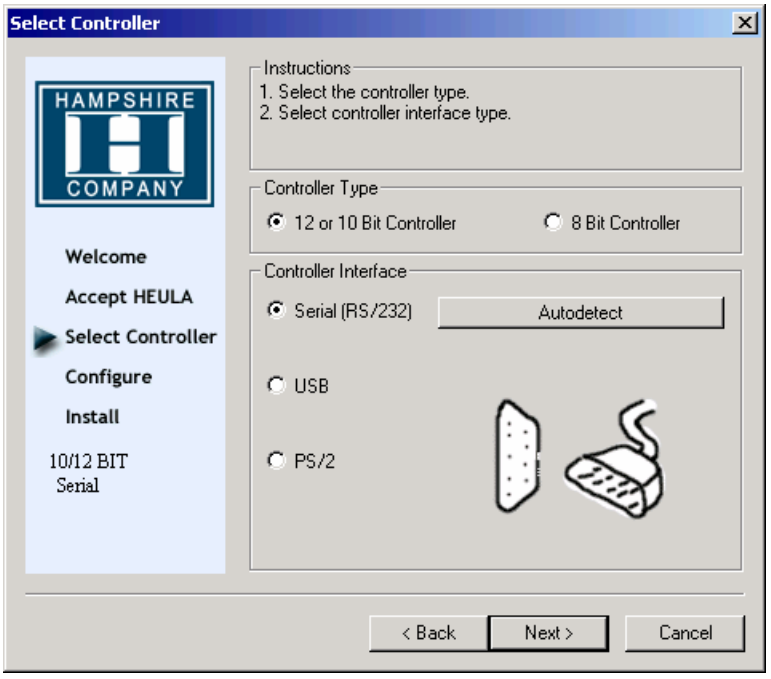
5. After the Welcome window appears, click Next to continue


Welcome
HAMPSHIRE COMPANY
Welcome
Accept HEULA
Select Controller
Configure
Install
Welcome to the TSHARC touch screen controller driver Setup.
The Setup program for the Hampshire TSHARC controllers for Microsoft Windows. Each Setup dialog has instructions for completing a step of the installation.
To install the Hampshire TSHARC controller driver now, click Next or press Enter.
To exit Setup without installing the Hampshire TSHARC controller driver, click Cancel at any time.
Warning: This computer program is protected by copyright law and international treaties.Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Rev 6.15
© 1995-2004 Hampshire Company, Inc.
< Back
Next >
Cancel

6. After accepting the license agreement, click Next


Software License Agreement
HAMPSHIRE COMPANY
Welcome
Accept HEULA
Select Controller
Configure
Install
Please read the following license agreement.
Press the PAGE DOWN key to see the rest of the agreement.
Hampshire End-User License Agreement (HEULA)
PLEASE READ THE LICENSE AGREEMENT
END-USER LICENSE AGREEMENT FOR HAMPSHIRE TSHARC PRODUCT SOFTWARE
IMPORTANT: READ CAREFULLY: This Hampshire End-User License Agreement ("HEULA") is a legal agreement between you (either an individual or a single entity) and Hampshire Company, Inc. for the Hampshire software product identified above, which includes computer software and may include associated media, printed materials, and "online" or electronic documentation ("SOFTWARE PRODUCT"). The SOFTWARE PRODUCT also includes any updates and supplements to the original SOFTWARE PRODUCT provided to you by Hampshire. Any software provided along with the SOFTWARE PRODUCT that is associated with a separate end-user license agreement is licensed to you under the terms of that license agreement. By installing, copying, downloading, accessing or otherwise using the
I accept all of the terms of the above License Agreement.
< Back
Next >
Cancel

7. Select controller type, interface, and then click Next



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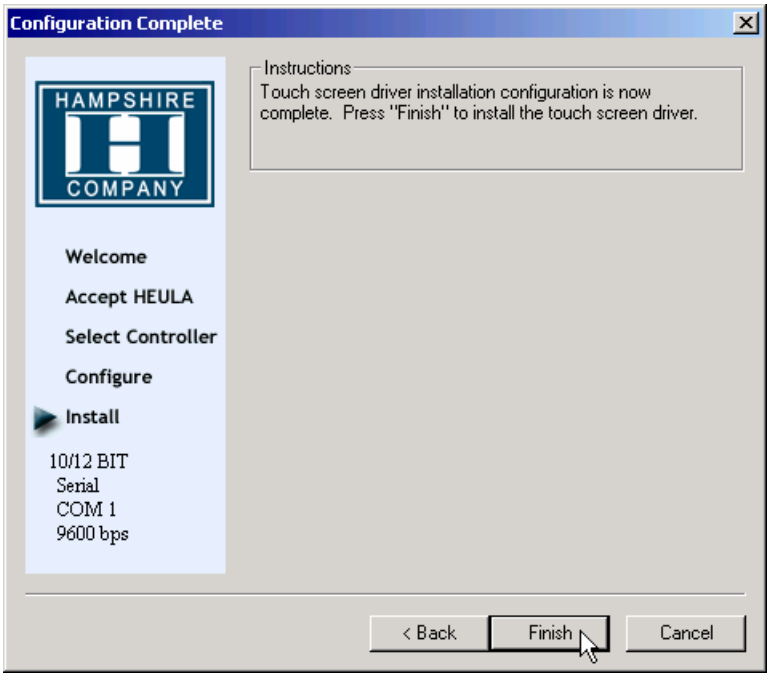
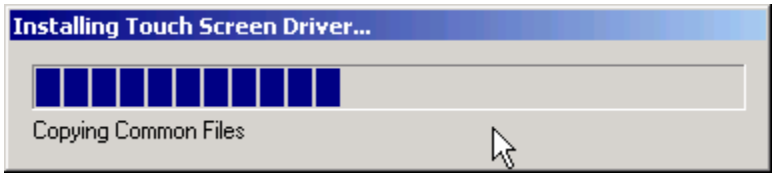
8. Click Finish to install touch screen driver



9. After touch screen driver is installed, you will be prompted to restart the computer



10. The driver you are installing is compatible with Windows. Click Continue Anyway (you may need to do this more than once).

Software Installation
The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

11. Click OK

12. Restart your computer before continuing with section 4.2.

4.2 Calibration

4.2.1 Calibration Options:

Three point calibration: Quick calibration of a known good touchscreen overlay. May be used to evaluate, test or verify actual touchscreen linearity.

- No correction.

Four Point Calibration (Default): Will compensate for skew, and some edge linearity anomalies.

- Best for general calibration.

Seven Point Calibration: More accurate than 3 point calibration. Helps calibrate screen to the edges.

- No correction.

Twenty Point Calibration: Provides the highest level of touchscreen linearization and skew correction. Should be used to get the best possible calibration

- May be used to extend the life of a failing touchscreen.

Calibration Offset: Because of the varied linearity that exists between touchscreen types, you may want to calibrate the edges of the touchscreen more precisely. Experiment with this setting to find the best result.

- Default is 20%.
- Select the large target to calibrate.

4.2.2 Configure Calibration Settings

Generally speaking, the default setting of 4 Point Calibration is quite accurate for most applications. ***It is recommended the user try this default setting before configuring calibration with a different setting.*** If adjustments need to be made, use the procedure on the next page:

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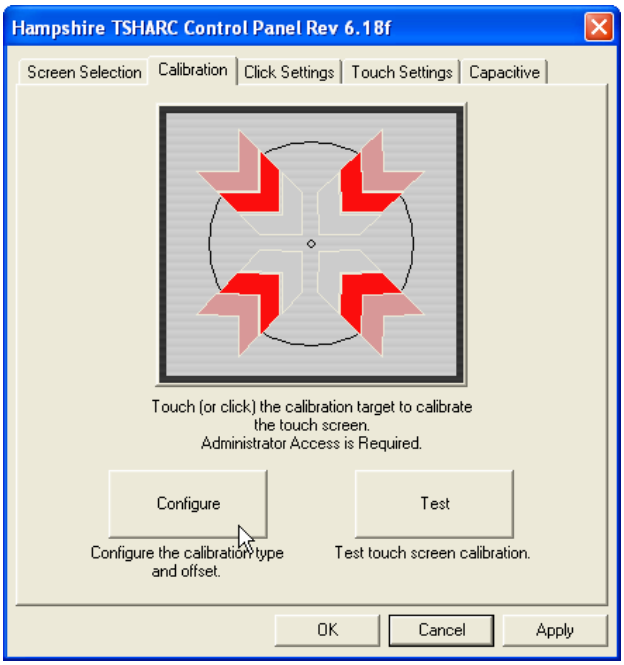
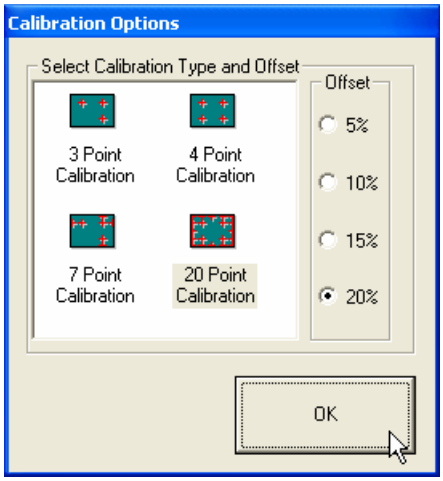
1. Open the Hampshire TSHARC™ Control Panel (Start\All Programs\ Hampshire TSHARC Control Panel). Click the Calibration tab.



2. Click/touch on the Configure button.



3. When the Calibration Options window appears:
   a. Click/touch on a Calibration Type icon

   -AND-

   b. Choose an Offset radio button.
4. Then click/touch OK.

4.2.3 Calibration Routine

1. Click/touch the calibration target seen in Figure 23 to begin calibration routine.

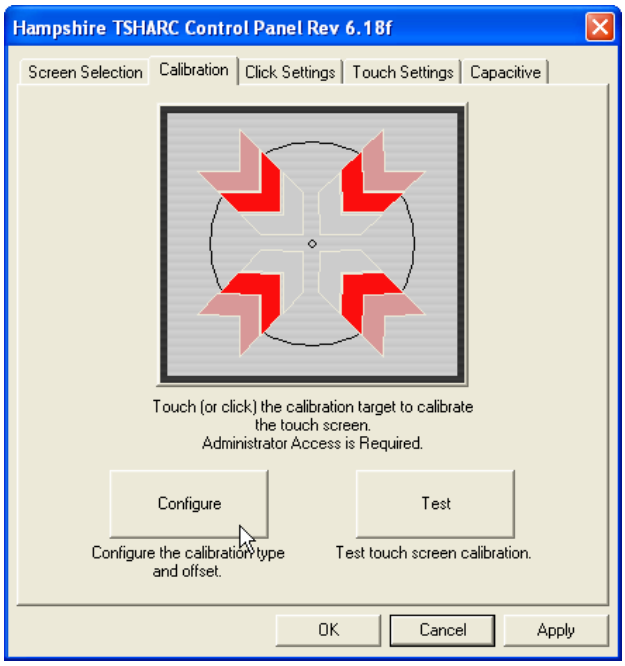


Figure 23: Calibration Target

2. Follow the on-screen prompts to complete calibration process.

Once you have selected the large calibration target from the control panel, the calibration program will begin.

3. As each target is displayed on the screen TOUCH and hold the center of each target as directed by the text located adjacent to each target.
4. Touch the center of each target as accurately as possible.

Hampshire calibration targets have been specially developed to assist you in calibrating your touchscreen as accurately as possible.

5. As each target is displayed, touch and hold the center of each calibration target until it shrinks and the Hold text changes to Release.

The calibration screen will automatically time out and return you to the control panel if the first point is not touched within 10 seconds. This time-out feature has been added to the calibration program to insure that you can exit the calibration screen in the event that you have a damaged our disconnected touchscreen. This time-out feature may also be configured for other time-out values.

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4.2.4 Calibration Test

This is the last screen displayed in the calibration process.

1. Touch the screen and notice if the calibration target is displayed under your finger or stylus. If the target appears directly under your finger, select the Accept button.
2. If the target does not appear directly beneath your finger or stylus, select the Cancel button, reconfigure your calibration options and recalibrate until you get an acceptable calibration. You may adjust the Offset, or try a different calibration scheme.
3. Select Accept to apply and record your calibration data.
4. Select Cancel to return to the calibration tab. Once you return to the calibration tab, select OK or Apply to save your settings.
5. If you have multiple displays return to the Screen Selection tab and select another display to calibrate.

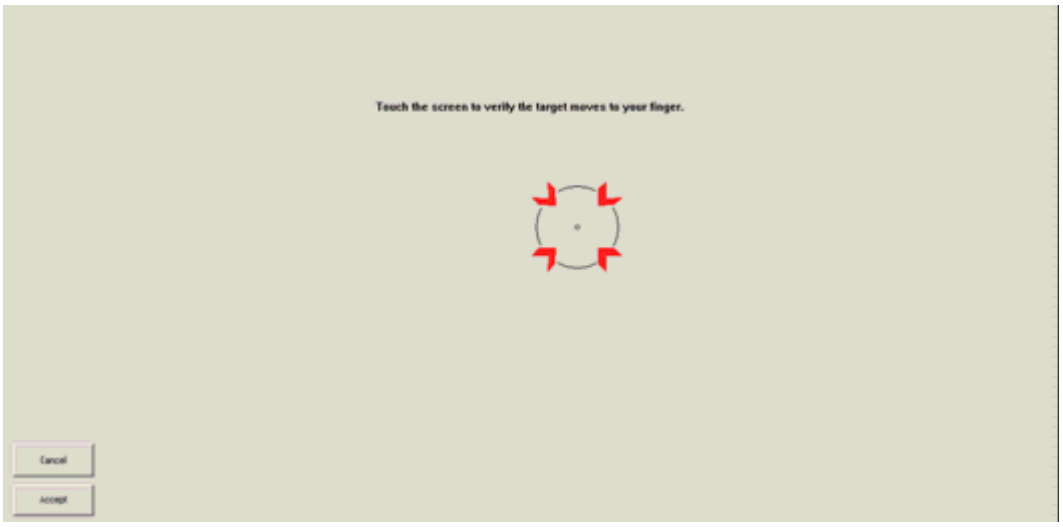
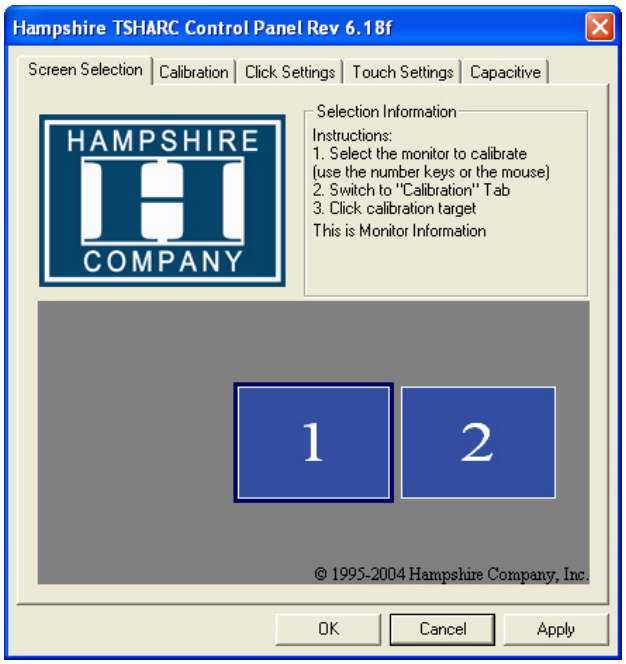


Figure 24: Calibration Target

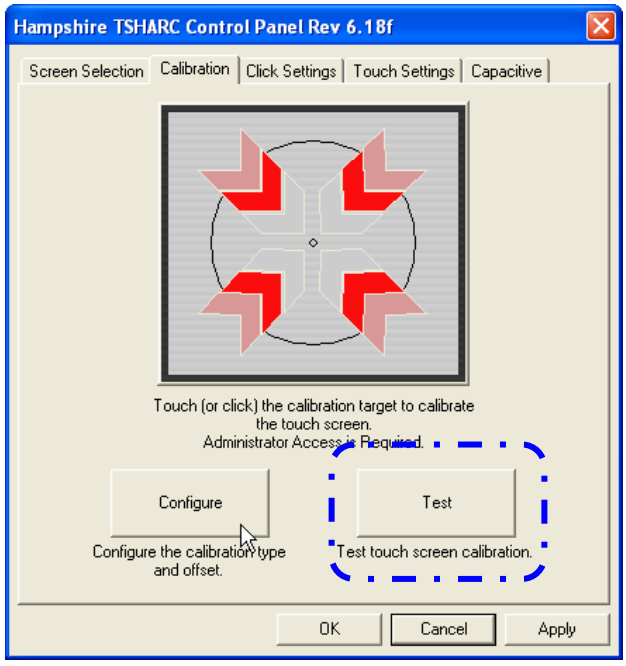
4.2.5 Drawing Test

Use the Test Feature to ensure calibration is accurate. Once you have calibrated your touchscreen, you may select the Test button located on the calibration tab of the control panel. This is a simple drawing program that you may use to determine if you touchscreen is working properly.

1. Open the Hampshire TSHARC Control Panel (Start\All Programs\ Hampshire TSHARC Control Panel).



2. Click/touch the Calibration Tab, then click/touch the Test button



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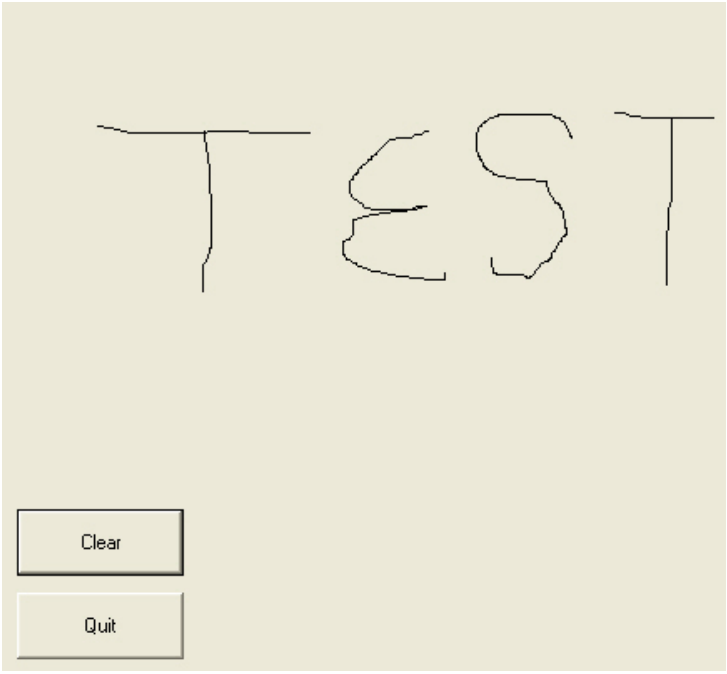
3. Tap some points on the screen, or, write a word to ensure the program renders the contact points correctly.



4. When done, click/touch Quit.

4.2.6 Right Click Emulation

The TSHARC Control Panel permits users to enable Right Click Emulation, which simulates functionality (where applicable) of a right mouse click. It works by touching the same point on the touchscreen for a specific amount of time predetermined on the Click Settings tab of the TSHARC Control Panel. You can enable this functionality and define the amount of time necessary on the Click Settings tab, as seen in Figure 25.

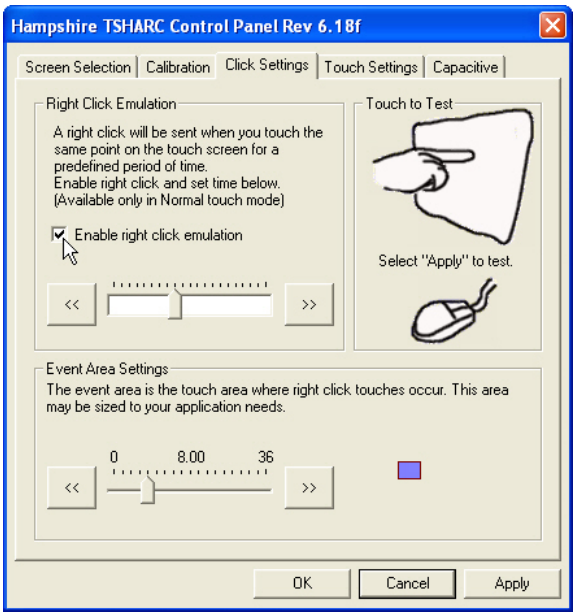

Hampshire TSHARC Control Panel Rev 6.18f
Screen Selection
Calibration
Click Settings
Touch Settings
Capacitive
Right Click Emulation
A right click will be sent when you touch the same point on the touch screen for a predefined period of time.
Enable right click and set time below.
(Available only in Normal touch mode)
Enable right click emulation
<<
>>
Touch to Test
Select "Apply" to test.
Event Area Settings
The event area is the touch area where right click touches occur. This area may be sized to your application needs.
0
8.00
36
<<
>>
OK
Cancel
Apply

Figure 25: Click Settings Tab

1. Click the Enable right click emulation checkbox to activate this feature.
2. The slider below the checkbox is used to determine the amount of time necessary when holding down a touchpoint to generate the right click event.

Event Area Settings:

Since it may be difficult to touch and hold an exact point on any touchscreen for a length of time, an event area is used to establish the size of the area in which a "hold" is acceptable.

3. The event area should be set to at least the same size as your finger tip.
4. Click or touch "Apply" to apply your selection. "OK" to apply and exit the control panel

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4.2.7 Touch Settings

Touch Sound: Check the Enable touch sound checkbox to enable a beep when the touchscreen is touched.

Normal: Emulates a standard mouse. Selecting the Normal radio button allows for single-click, double click, drawing, dragging and right click option (if right click is enabled).

Touch down: Touch down will allow for a click event to take place at touch down. You will not be able to draw or drag if this option is selected.

Touch up: Touch sent only at touch up. Disables right click and double click functions. Click or touch Apply to apply your selection. OK to apply and exit the control.

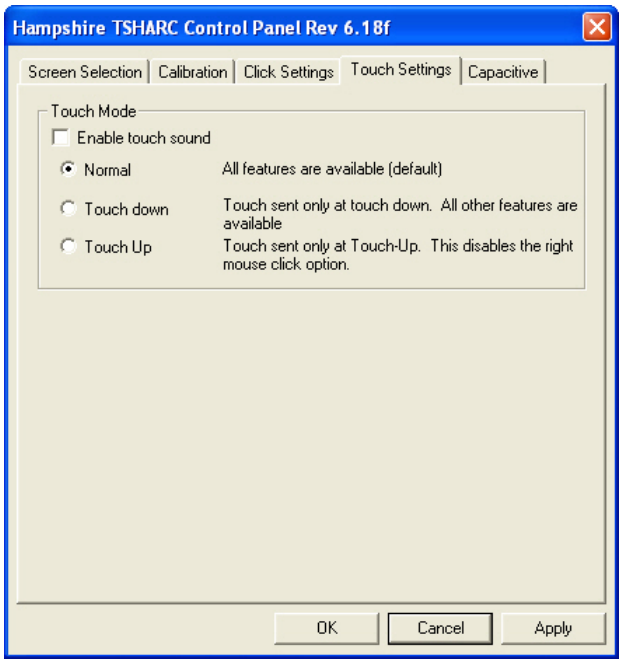

Figure 26: Touch Settings Tab

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5 Product Care

The CYRAQ® unit is primarily a maintenance-free product. It does require occasional cleaning to keep it looking and performing its best. Additionally, please make sure the unit is placed with consideration for environmental temperature, humidity shock and vibration tolerances noted in the Specifications section of this manual. Some of those specifications are listed again below for your convenience.

Environmental Specifications		
Operating Temperature		32°F....122°F (0°C....50°C)
Storage Temperature		-4°F....140°F (-20°C....60°C)
Relative Humidity, noncondensing		10%....95%
Shock Resistance	Operating	30g half-sine for 11ms
Vibration Resistance	Operating	15 to 57Hz: 0.006" peak-to-peak; 57 to 640Hz sine: 1.0g peak-to-peak
Altitude, Max.		6.21mi (10km)

5.1 Cleaning

Prior to cleaning the CYRAQ unit, disconnect power to the device.

5.1.1 Touchscreen

Clean the touchscreen with household glass cleaner or just plain water, and soft cloth.

- We do not recommend using paper products to clean the touchscreen.
- Always dampen the towel ***first***, and then clean the touchscreen to reduce abrasion from the cleaning applicator.
- Glass cleaner sprayed directly onto the CYRAQ's screen could possibly be over sprayed leak into the back of a unit if not mounted correctly, and cause damage.

5.1.2 LCD

Clean the LCD screen with household glass cleaner or just plain water, and soft cloth

- Do not spray cleaner or water directly on any part of the unit—front or back.
- We do not recommend using paper products to clean your display screen
- Always dampen the towel ***first***, and then clean the LCD screen to reduce abrasion from the cleaning applicator.
- Do not use or store flammable substances near the LCD.

5.1.3 Fan Filters

Periodically, you may find it necessary to clean fan filters built into the back of the display's enclosure. Cleaning frequency is largely based on environmental and other conditions immediately surrounding the unit. Since most applications require the CYRAQ to be rack or panel-mounted, the engineers at CyberResearch, Inc. designed a filter system users can maintain without dismounting the display, disassembling the unit, or removing the fan filters from the enclosure.

Disconnect power to the unit before beginning the subsequent steps

To clean the fan filters:

1. Power off the unit using the On/Off switch.
2. Unplug the unit's AC power.
3. Gain access to the rear of the unit.
4. Carefully run a vacuum hose (using a crevice attachment is ideal) over the protective fan filter screens (Figure 27) to remove dust and debris from the protective covers and underlying fan filters themselves.
5. When done, restore power to unit.

Figure 27: Cleaning Fan Filters

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6 Mechanical Drawings

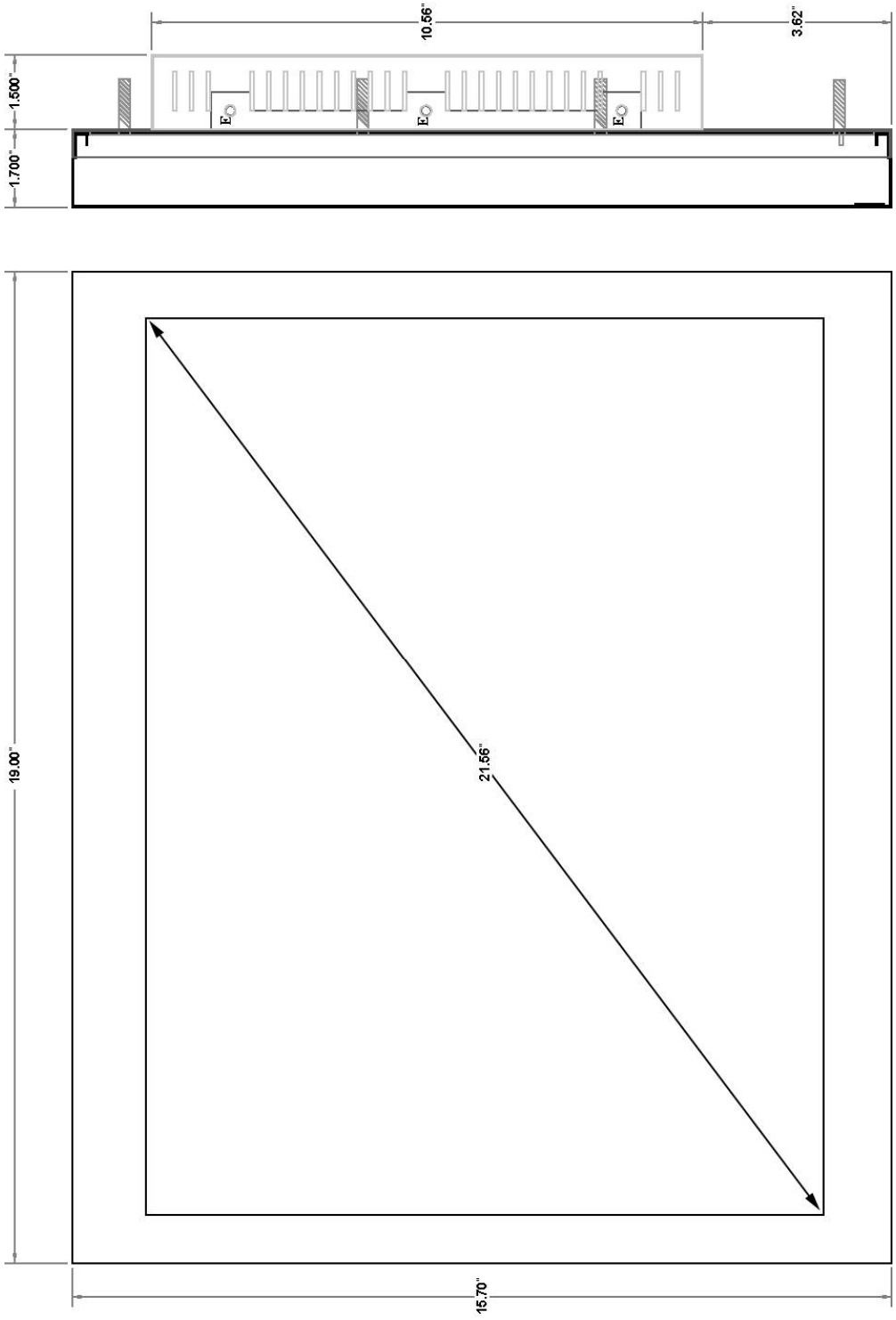

Figure 28: Display and Enclosure Dimensions for Universal-Mount Models

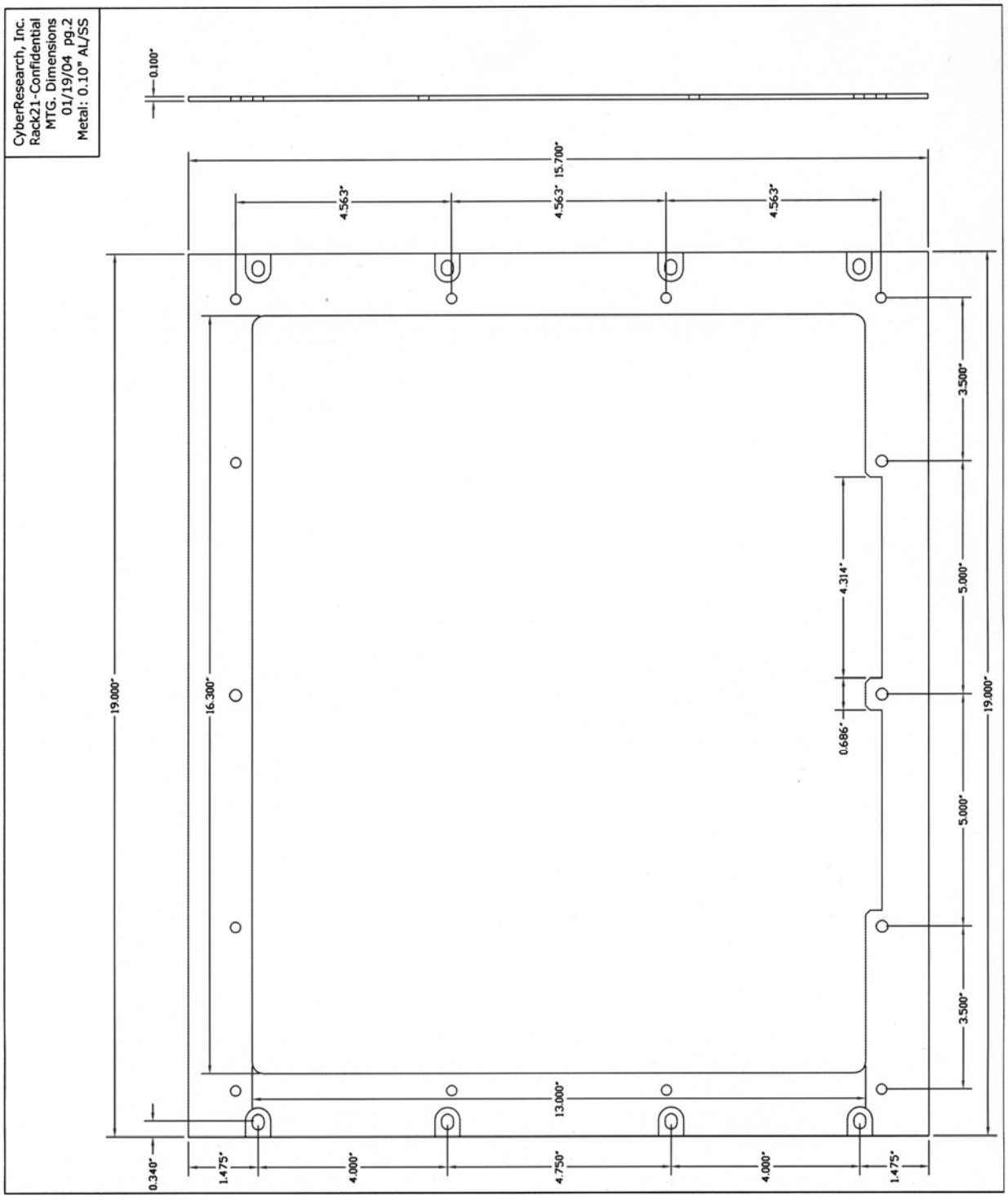

Figure 29: Landscape Mounting Plate Dimensions for Universal-Mount Models

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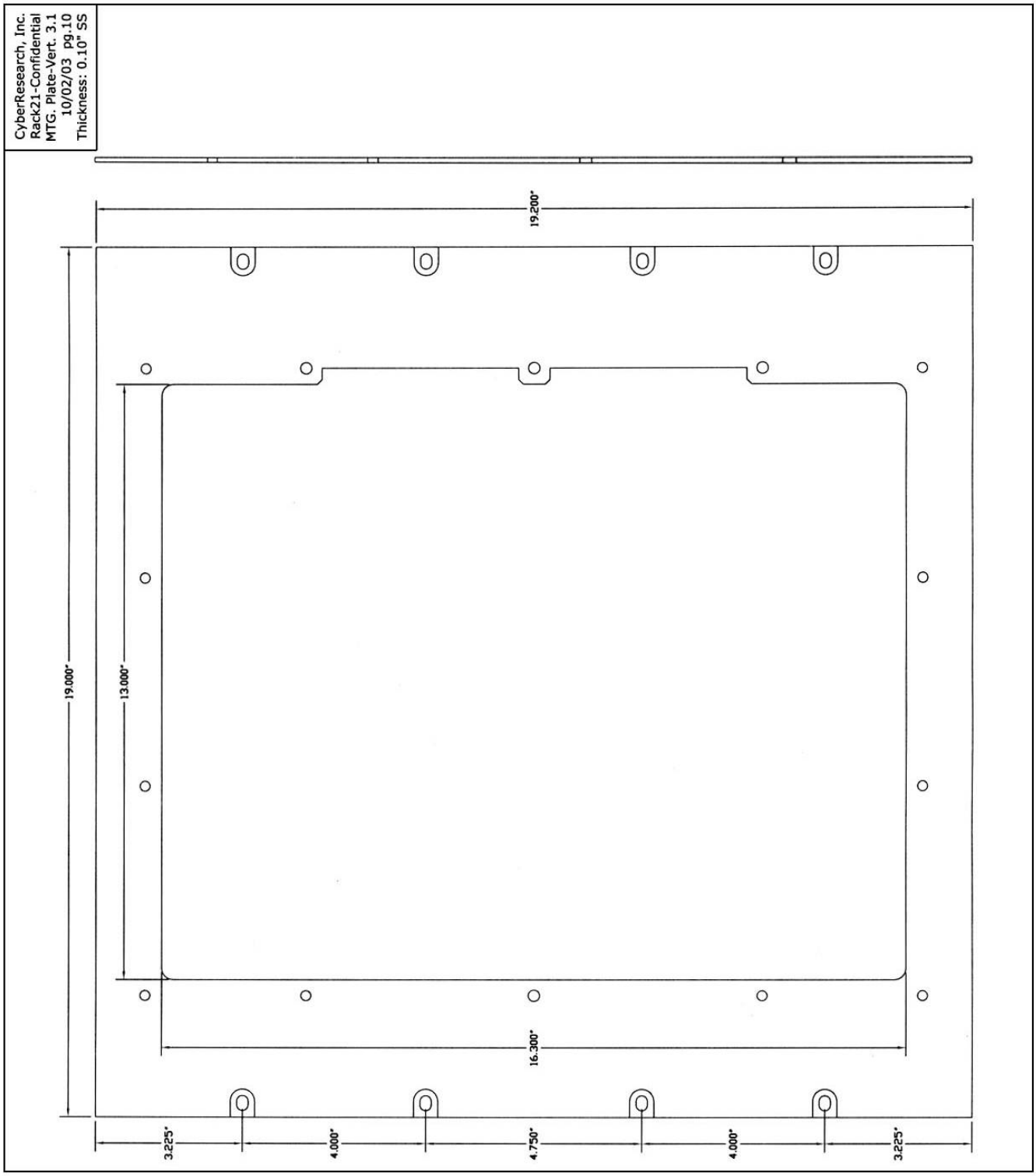

Figure 30: Portrait Mounting Plate Dimensions for Universal-Mount Models

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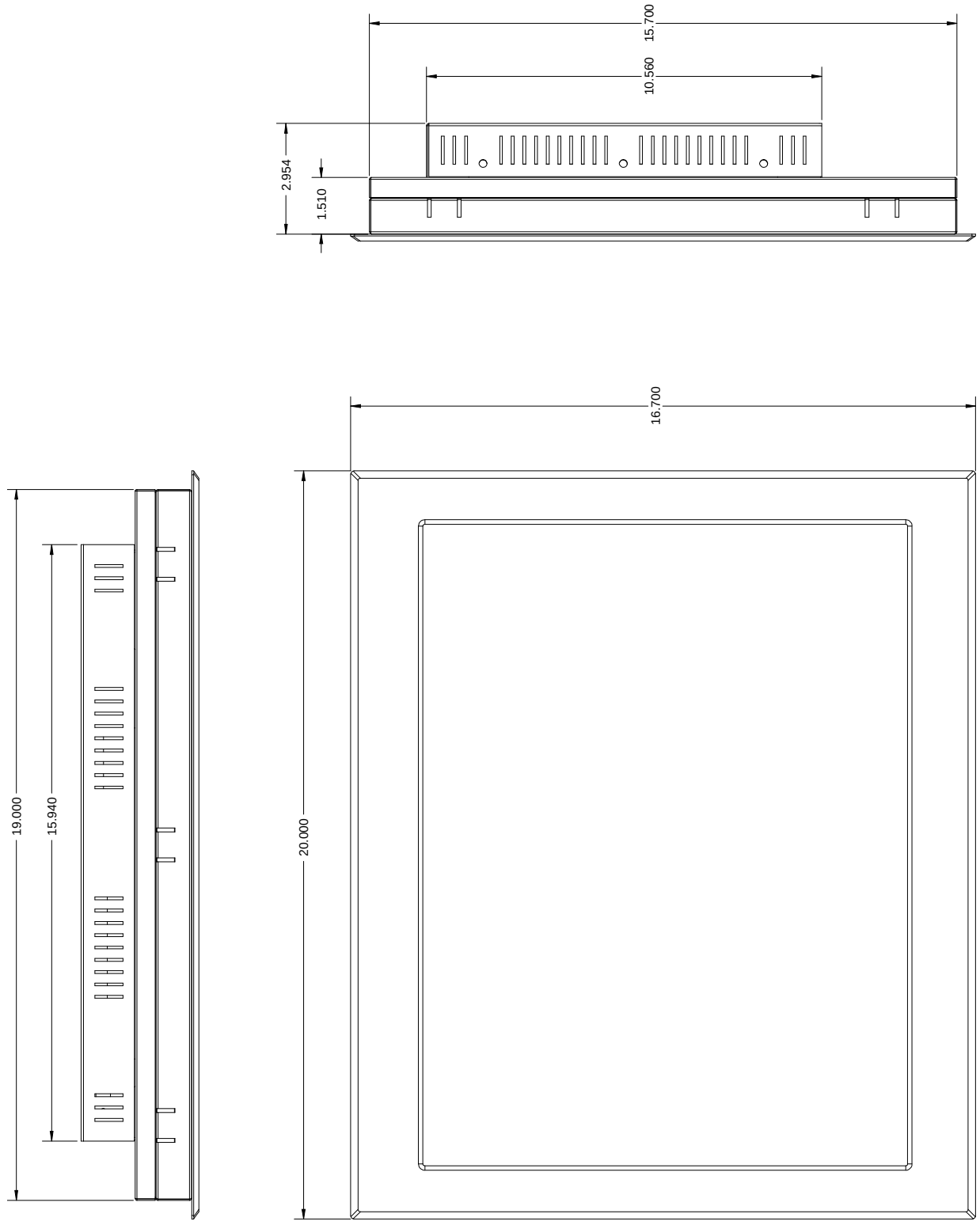

Figure 31: Display and Enclosure Dimensions for Flush-Mount Models

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Product Service

Diagnosis and Debug

CyberResearch, Inc. maintains technical support lines staffed by experienced Applications Engineers and Technicians. There is no charge to call and we will return your call promptly if it is received while our lines are busy. Most problems encountered with data acquisition products can be solved over the phone. Signal connections and programming are the two most common sources of difficulty. CyberResearch support personnel can help you solve these problems, especially if you are prepared for the call.

To ensure your call's overall success and expediency:

1) Have the phone close to the PC so you can conveniently and quickly take action that the Applications Engineer might suggest.
2) Be prepared to open your PC, remove boards, report back-switch or jumper settings, and possibly change settings before reinstalling the modules.
3) Have a volt meter handy to take measurements of the signals you are trying to measure as well as the signals on the board, module, or power supply.
4) Isolate problem areas that are not working as you expected.
5) Have the source code to the program you are having trouble with available so that preceding and prerequisite modes can be referenced and discussed.
6) Have the manual at hand. Also have the product's utility disks and any other relevant disks nearby so programs and version numbers can be checked.

Preparation will facilitate the diagnosis procedure, save you time, and avoid repeated calls. Here are a few preliminary actions you can take before you call which may solve some of the more common problems:

1) Check the PC-bus power and any power supply signals.
2) Check the voltage level of the signal between SIGNAL HIGH and SIGNAL LOW, or SIGNAL+ and SIGNAL– . It CANNOT exceed the full scale range of the board.
3) Check the other boards in your PC or modules on the network for address and interrupt conflicts.
4) Refer to the example programs as a baseline for comparing code.

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Warranty Notice

CyberResearch, Inc. warrants that this equipment as furnished will be free from defects in material and workmanship for a period of one year from the confirmed date of purchase by the original buyer and that upon written notice of any such defect, CyberResearch, Inc. will, at its option, repair or replace the defective item under the terms of this warranty, subject to the provisions and specific exclusions listed herein.

This warranty shall not apply to equipment that has been previously repaired or altered outside our plant in any way which may, in the judgment of the manufacturer, affect its reliability. Nor will it apply if the equipment has been used in a manner exceeding or inconsistent with its specifications or if the serial number has been removed.

CyberResearch, Inc. does not assume any liability for consequential damages as a result from our products uses, and in any event our liability shall not exceed the original selling price of the equipment.

The equipment warranty shall constitute the sole and exclusive remedy of any Buyer of Seller equipment and the sole and exclusive liability of the Seller, its successors or assigns, in connection with equipment purchased and in lieu of all other warranties expressed implied or statutory, including, but not limited to, any implied warranty of merchant ability or fitness and all other obligations or liabilities of seller, its successors or assigns.

The equipment must be returned postage prepaid. Package it securely and insure it. You will be charged for parts and labor if the warranty period has expired.

Returns and RMAs

If a Cyber Research product has been diagnosed as being non-functional, is visibly damaged, or must be returned for any other reason, please call for an assigned RMA number. The RMA number is a key piece of information that lets us track and process returned merchandise with the fastest possible turnaround time.

PLEASE CALL FOR AN RMA NUMBER!

Packages returned without an RMA number will be refused!

In most cases, a returned package will be refused at the receiving dock if its contents are not known. The RMA number allows us to reference the history of returned products and determine if they are meeting your application's requirements. When you call customer service for your RMA number, you will be asked to provide information about the product you are returning, your address, and a contact person at your organization.

Please make sure that the RMA number is prominently displayed on the outside of the box.

• Thank You •

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CyberResearch, Inc.
25 Business Park Drive
Branford, CT 06405 USA
P: (203) 483-8815; F: (203) 483-9024
www.cyberresearch.com